

PLANKTON DIATOM ASSEMBLAGES IN LAKE MICHIGAN

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## TABLE OF CONTENTS

INTRODUCTION. . . . .	1
PREVIOUS INVESTIGATIONS . . . . .	2
SAMPLING. . . . .	3
PREPARATION AND ANALYSIS PROCEDURES . . . . .	4
SYSTEMATIC RESULTS. . . . .	5
CONCLUSIONS . . . . .	208
SUMMARY . . . . .	214
ACKNOWLEDGMENTS . . . . .	215
LITERATURE CITED. . . . .	216
APPENDIX A. . . . .	221





## INTRODUCTION

The flora of the Laurentian Great Lakes has lain before the scientific public as an unaccepted challenge for nearly 300 years. Until relatively recent times the very size of these bodies of water has discouraged their investigation, as the average investigator lacked the necessary physical resources to mount an effective attack upon the problem. As a result, what knowledge we now have at hand has largely been gathered either through short-term studies of the nearshore flora, often conducted by interested amateurs, or as an adjunct to practically oriented research in fisheries and water quality. With the increasingly apparent necessity to deal with the ecology of the lakes if they are to be preserved in a condition useful to man, this lack of orderly progress, if compared to such thoroughly investigated areas as the terrestrial flora, begins to bear bitter fruit.

The dominant organisms in all of the Great Lakes, at least in their pristine condition, are the diatoms. The investigation reported here is an attempt to more fully document the plankton diatom flora of one of the Great Lakes, Lake Michigan. Over the past three years about 1000 collections, both of the modern flora and of preserved collections dating back to about 1880, have been examined. Although the primary emphasis has been the determination of the species present, considerable effort has been devoted to determining the relative abundance of the various elements of the flora, their seasonal cycles, and the history of the changes in the flora during the period of record. Patently none of these objectives will be fulfilled by any single investigation. It is hoped, however, that the results of this research will stimulate others to carry on this general area of research to fruitful conclusions and that the conclusions reached will prove useful to researchers in other ancillary fields.

## PREVIOUS INVESTIGATIONS

Probably the earliest traceable collections from the Great Lakes area that have been preserved to the present day are those of Ehrenberg (1854-56). The earliest reports dealing with Lake Michigan phytoplankton are the lists published by Briggs (1872) and Thomas and Chase (1887). All of these persons were more or less amateur diatomists although they published extensively in the finest tradition of the gentleman amateur scientist of that day.

Further records of the Lake Michigan flora are contained in the voluably reported results of the fisheries investigations of Forbes (1882a, 1882b, 1882c, 1883), Ward (1896) and Thompson (1896).

In 1904 Chase published a list of Michigan diatoms including many from Lake Michigan. Some records of the flora of the extreme southern end of Lake Michigan are included in the reports of the water quality investigations of Leighton (1907) and Baylis and Gerstein (1929). Although containing no records of the algal flora, the report of a similar investigation by Crohurst and Veldee (1927) gives an excellent account of the general conditions in the Chicago area at the time.

In 1927 Eddy published his investigations of the plankton of Lake Michigan, and further records are contained in his later general work (1934). Ahlstrom's (1936) report contains the first account of systematic collections of the offshore plankton. On the other hand, Skvortzow's (1937) never-completed account of the Lake Michigan diatoms is entirely based on material from the water supply of the city of Chicago. In 1944 Lackey published an account of the phytoplankton of the southern end of Lake Michigan.

A number of reports (Daily 1938; Damann 1941; Griffith 1955) have emanated from the botanical laboratories of Northwestern University. The work of Daily and Damann are of particular interest in that their collections are carefully preserved and available for study. Damann later (1945, 1960) published reports based on the plankton collections of the Chicago filtration plant. Although not effectively published, numerous records are available from this installation. Of particular interest to this investigation are the reports of Vaughn (1961, 1962).

Records of the Lake Michigan plankton at two locations have been gathered by the National Water Quality Network (1960, 1961, 1962) and are reported in publications by Williams (1962, 1964) and Williams and Scott (1962). Other recent publications include those of Stoermer and Kopczyńska (1967), Stoermer (1967, 1968), and Holland (1968, 1969).

Patrick and Reimer's treatise on the diatoms of the United States (1966) also contains numerous records from Lake Michigan, although their practice of recording distributions from broad geographic areas makes it difficult to determine the exact distribution of the species in question.

## SAMPLING

The majority of samples reported in this study were taken by means of a 1/2 meter #20 plankton net. Where water depths permitted, the sampling procedure was a vertical haul from approximately 2 m off the bottom to the surface. In nearshore areas and channels it was necessary to resort to oblique tows. While the limitations of this sampling method are well known and recognized, it is the only method that allows direct comparison between modern samples with the previously gathered samples available from Lake Michigan. It is perhaps important to emphasize that, even in this limited context, complete uniformity was not achieved. The samples of Thomas and Chase were, in most instances, taken directly from the water supply of the city of Chicago by placing several layers of muslin directly over a water tap and thus straining out sufficient quantities of algae for the preparation of permanent slides. The absolute efficiency of this sampling method remains unknown and is not amenable to modern testing. The samples of Daily, Damann and Ford were apparently taken nearshore by means of a horizontal tow of a small diameter, hand cast net.

All material examined is listed in appendix "A." The modern collections, presently housed in the author's collection at the Great Lakes Research Division, University of Michigan, consist of a preserved sample of uncleaned material, a sample of cleaned material, and duplicate prepared slides. In most instances similar material of the historic collections is available at the Academy of Natural Sciences, Philadelphia. In some cases, particularly with the older samples, only prepared slides exist, the older material having been lost or not preserved by the original investigator.

## PREPARATION AND ANALYSIS PROCEDURES

All material gathered in the present investigation was preserved in the field, immediately after collection, in buffered formalin. After being received in the laboratory the samples were split and one subsample was set aside, without further treatment as a reference collection. The other subsample was cleaned, by standard methods for diatom taxonomy (Patrick and Reimer 1966). Duplicate prepared slides were made from each cleaned subsample and the remaining material was preserved in ethanol and set aside as a reference collection of cleaned material. The prepared slides are strewn mounts, care being taken that the specimens are evenly distributed and present in appropriate density to facilitate subsequent identification and counting.

After preparation, all slides were examined to determine that processing had been satisfactory and to determine the species present. All entities reported are represented by at least one specimen, marked by a circle engraved on the cover of the appropriate permanent slide, included in the author's concept of the taxon. In order to facilitate systematic treatment, photographic illustrations were made of each entity discovered in the course of the investigation and these illustrations, together with a short description of the taxon and the slide number and location coordinates of voucher specimens, are maintained in a permanent file. In all instances optical equipment used for examination of the slides and for taxonomic determinations consisted of a Leitz Ortholux microscope fitted with a full oil immersion system giving a N. A. of at least 1.30.

In the case of slides selected for detailed population analysis, counts were made, using the same optical equipment, either of the entire slide, in the case of the offshore samples, or of 1/2 of the slide, in the case of harbor or nearshore samples. The distribution information given in the systematic results are based on these counts, except in the case of entities which did not occur on the slides counted, in which case the number of a slide known to contain the entity in question is given.

Computer generated listing of the absolute frequency, the relative frequency and the contribution to diversity of each taxon in the slides counted, which cost considerations prohibit reproducing in this report, are available. The calculated diversity estimates for each assemblage investigated are given in Appendix "A."

## SYSTEMATIC RESULTS

In the following section a tabulation of the entities encountered in the investigation is given. The genera are listed in alphabetical order and the species of each genus are listed in alphabetical order following. Short descriptions are given for the species of the major plankton genera, including the morphological measurements of specimens in populations from Lake Michigan. Similar description of the range of variation of other populations awaits thorough investigation of the benthic flora.

Because of the time limitations on the completion of this project, it was necessary to proceed with population analyses before reasonably complete systematic treatment of the assemblages could be completed. For this reason a large number of morphologically distinct entities which could not be identified with a recognized taxon were set aside and given a numerical designation. Further research during the course of the investigation has allowed us to determine the relationships of the majority of these, but there remains a significant number which we have not been able to identify. These entities are treated as species *incertae sedis* and are listed at the end of each genus. In some instances further research will show these entities to belong to recognized taxa. Some of them undoubtedly belong to undescribed species. These eventually will be described in the appropriate literature. In many instances determinations await investigation of the benthic flora in order that sufficient specimens be obtained to allow determination of the range of variation of the taxon. Finally a certain number probably are abnormal specimens which can never be satisfactorily determined.

Following the systematic information, a list of occurrences of the species in question in the populations counted is given. This information is presented in the following format: 1) the collection number, 2) the station designation, 3) the date of collection, 4) the proportion of the entity in question in the collection. In cases where a particular entity did not occur in the collections subjected to detailed population analysis, the number of a voucher slide known to contain the entity is given.

Genus *Achnanthes* Bory  
Bory, Dict. Class. Hist. Nat., 1:79-80. 1822.

The majority of species of the genus *Achnanthes* find their primary habitat in periphyton communities. Most of the specimens observed in plankton collections from Lake Michigan are probably derived from such communities and their occurrence in the plankton is accidental. Certain species are, however, secondarily planktonic in that they regularly grow attached to some of the larger species of euplanktonic algae. A notable example of this tendency is *A. clevei*, which is regularly noted in plankton collections. It is probable that many of the smaller members of the genus adopt this habit of growth under certain conditions.

*Achnanthes affinis* Grun.

*Achnanthes affinis* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):20. 1880.

1 ACAFFINI TCT NO OF STATIONS 101											
( 60973	CH	1876	0.02362 )	(46510	CH	001945	0.00109 )	(46917	CH	12JA1946	C.00055 )
(46914	CH	19AP1946	0.00107 )	(46523	CH	22NO1946	0.00219 )	(46909	CH	MR1947	0.00455 )
(46916	CH	4MY1947	0.03698 )	(46519	CH	5JN1947	15.09082 )	(46907	CH	JL1947	0.00049 )
(46913	CH	6AU1947	0.07321 )	(46522	CH	21AU1947	0.01842 )	(46758	EV	5JN1937	0.01070 )
(46770	EV	9JL1937	0.00596 )	(46764	EV	17JL1937	0.00806 )	(46757	EV	25JL1937	0.01444 )
(46747	EV	1AU1937	0.00990 )	(46763	EV	23AU1937	0.04058 )	(46760	EV	22SE1937	C.00492 )
(46750	EV	24SE1937	0.00943 )	(46748	EV	13CC1937	0.08540 )	(46767	EV	27OC1937	C.05416 )
(46749	EV	12MR1938	0.01214 )	(46768	EV	16MR1938	0.05880 )	(46762	EV	18MR1938	0.08822 )
(46766	EV	14DE1938	0.01584 )	( 1226	C 7	16MY1964	0.01522 )	( 1240	D 6	10JN1964	C.00153 )
( 1243	E 6	13JN1964	0.00209 )	( 1244	F 1	11JN1964	0.00219 )	( 1245	F 2	11JN1964	C.00692 )
( 1255	D 5	15JL1964	0.00257 )	( 1258	F 1	6JL1964	0.16518 )	( 1259	F 2	6JL1964	C.01859 )
( 1260	F 3	6JL1964	0.00764 )	( 1443	B 6	16AU1964	0.00198 )	( 1267	D 6	18AU1964	0.00216 )
( 1268	E 2	15AU1964	0.04103 )	( 1270	F 1	10AU1964	0.63717 )	( 1272	C* 1	10SE1964	C.00410 )
( 1279	E 1	16SE1964	0.03534 )	( 1280	E 2	16SE1964	0.00681 )	( 1285	F 1	15SE1964	1.22299 )
( 1286	F 2	15SE1964	0.01095 )	( 1287	F 3	15SE1964	0.01001 )	( 1302	E 5	13OC1964	C.00405 )
( 1303	E 6	13OC1964	0.00560 )	( 1304	F 1	11CC1964	0.01729 )	( 1305	F 2	11OC1964	0.02933 )
( 1306	F 3	11OC1964	C.01940 )	( 1308	C 7	6NO1964	C.00608 )	( 1322	E 6	7NO1964	C.00333 )
( 1344	C 3	25AP1967	0.00165 )	( 1452	E 2	14JL1967	0.03619 )	( 1505	A 4	28AU1967	0.00515 )
( 1512	E 3	1SE1967	0.00393 )	( 1535	C 7	20SE1967	0.00322 )	( 1536	E 2	24SE1967	C.01091 )
( 1537	E 3	24SE1967	0.00431 )	( 1538	E 5	23SE1967	0.01657 )	( 1540	C 5	40C1967	0.00496 )
( 1541	E 2	11OC1967	0.00532 )	( 1542	E 3	11OC1967	C.00509 )	( 1543	E 5	10OC1967	C.02155 )
( 1381	GS 5	10MY1967	0.00239 )	( 1384	GS 8	10MY1967	0.00370 )	( 1387	GS11	12MY1967	0.03169 )
( 1389	GS13	12MY1967	C.01031 )	( 1390	GS14	12MY1967	0.00587 )	( 1391	GS15	12MY1967	C.00479 )
( 1392	GS16	12MY1967	0.00616 )	( 1394	GS18	13MY1967	0.00344 )	( 1554	GS 1	30C1967	C.01067 )
( 1555	GS 2	30C1967	0.01766 )	( 1557	GS 4	30C1967	0.02616 )	( 1559	GS 7	40C1967	0.00350 )
( 1560	GS 8	40C1967	0.00945 )	( 1562	GS10	50C1967	0.00247 )	( 1565	GS13	50C1967	C.01521 )
( 1567	GS15	50C1967	C.00318 )	( 1569	GS17	50C1967	0.00297 )	( 1571	GS19	60C1967	C.00234 )
( 1573	GS21	60C1967	0.00560 )	( 1574	GS22	60C1967	C.14094 )	( 1575	GS28	60C1967	C.00516 )
( 1524	MI 1	20SE1967	C.02189 )	( 1546	LU 1	2CC1967	0.08003 )	( 1521	SH 1	18SE1967	0.00577 )
( 1523	RA 1	19SE1967	0.01845 )	( 1526	MC 1	20SE1967	C.01707 )	( 1530	FR 1	24SE1967	C.03000 )
( 1545	WL 1	20CC1967	0.00676 )	( 1549	MQ 1	4CC1967	0.02741 )	( 1552	SM 1	60C1967	C.00660 )
( 1550	MR 1	50C1967	0.02478 )	( 1426	MS 2	29MY1967	0.05249 )	( 1350	BH 2	19AP1967	C.00220 )
( 1402	TR 2	6MY1967	C.01083 )	( 1352	KW 2	21AP1967	0.00859 )	( 1403	CA 2	10MY1967	1.42540 )
( 1404	MQ 2	10MY1967	0.02541 )	( 1405	ES 2	12MY1967	0.01290 )	(			

*Achnanthes biasolettiana* (Kütz.) Grun.

*Synedra biasolettiana* Kützling, Bacill., p. 63, pl. 3, fig. 22. 1844.  
*Achnanthes biasolettiana* (Kütz.) Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):22. 1880.

2 ACBIASOL TCT NO OF STATIONS 8											
(46743	EV	20JN1937	0.00428 )	(46762	EV	18MR1938	0.04411 )	( 1285	F 1	15SE1964	C.01165 )
( 1389	GS13	12MY1967	0.00258 )	( 1565	GS13	50C1967	0.04056 )	( 1574	GS22	60C1967	C.00863 )
( 1405	ES 2	12MY1967	0.01290 )	( 1407	SM 2	14MY1967	0.00597 )	(			

*Achnanthes calcar* Cleve

*Achnanthes calcar* Cleve, Acta Fauna Fl. Fennica, 8(2):51, pl. 3, fig. 8. 1891.

3 ACCALCAR TOT NO OF STATIONS 4											
( 1560	GS 8	40C1967	0.00472 )	( 1565	GS13	5CC1967	0.00507 )	( 1527	TR 1	2CSE1967	0.00629 )
( 1550	MR 1	50C1967	0.01239 )	(							

*Achnanthes clevei* Grun.

*Achnanthes clevei* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):21. 1880.

This species is quite common in plankton collections from Lake Michigan. As previously noted, it is often observed growing attached to some of the larger euplanktonic algae.

4 ACCLEVEI TOT NO OF STATIONS 58											
( 3540	CH	11MY1879	0.00466 )	( 46770	EV	9JL1937	0.00596 )	( 46750	EV	24SE1937	0.00471 )
( 46762	EV	18MR1938	0.02206 )	( 1240	D 6	10JN1964	0.00153 )	( 1258	F 1	6JL1964	0.00236 )
( 1268	E 2	15AU1964	0.00274 )	( 1270	F 1	10AU1964	0.00272 )	( 1279	E 1	16SE1964	0.00393 )
( 1285	F 1	15SE1964	0.04659 )	( 1300	E 3	13OC1964	0.00358 )	( 1306	F 3	11OC1964	0.00277 )
( 1316	D 6	9NO1964	0.00378 )	( 1320	E 4	7NO1964	0.00207 )	( 1323	F 1	6NO1964	0.00139 )
( 1340	C 7	28MR1967	0.00145 )	( 1343	A 6	19AP1967	0.00069 )	( 1346	C 7	21AP1967	0.00134 )
( 1435	C 7	13JN1967	0.00316 )	( 1512	E 3	1SE1967	0.00393 )	( 1536	E 2	24SE1967	0.00273 )
( 1542	E 3	11OC1967	0.00509 )	( 1388	GS12	12MY1967	0.00603 )	( 1389	GS13	12MY1967	0.00258 )
( 1392	GS16	12MY1967	0.00308 )	( 1394	GS18	13MY1967	0.00172 )	( 1395	GS19	13MY1967	0.00117 )
( 1554	GS 1	30C1967	0.00712 )	( 1555	GS 2	30C1967	0.00353 )	( 1557	GS 4	30C1967	0.01495 )
( 1565	GS13	50C1967	0.00592 )	( 1566	GS14	5CC1967	0.00183 )	( 1567	GS15	50C1967	0.00953 )
( 1569	GS17	50C1967	0.00149 )	( 1571	GS19	60C1967	0.00059 )	( 1572	GS20	60C1967	0.00090 )
( 1573	GS21	60C1967	0.00224 )	( 1574	GS22	60C1967	0.05753 )	( 1575	GS28	60C1967	0.00129 )
( 1544	MU 1	20C1967	0.00238 )	( 1546	LU 1	20C1967	0.05002 )	( 1526	MO 1	20SE1967	0.01138 )
( 1527	TR 1	2CSE1967	0.11321 )	( 1528	SB 1	20SE1967	0.02888 )	( 1529	KW 1	20SE1967	0.00394 )
( 1530	FR 1	24SE1967	0.07001 )	( 1545	WL 1	20C1967	0.04730 )	( 1548	CA 1	30C1967	0.01272 )
( 1551	ES 1	50C1967	0.02396 )	( 1550	MR 1	50C1967	1.58592 )	( 1553	SG 1	60C1967	0.02203 )
( 1426	MS 2	29MY1967	0.16798 )	( 1417	HO 2	22MY1967	0.00748 )	( 1350	BH 2	19AP1967	0.07929 )
( 1399	PH 2	5MY1967	0.00680 )	( 1354	GH 2	25AP1967	0.00173 )	( 1404	MG 2	10MY1967	0.00501 )
( 1407	SM 2	14MY1967	0.00597 )	(							

*Achnanthes clevei* var. *rostrata* Hust.

*Achnanthes clevei* var. *rostrata* Hustedt in: Pascher, Süßw.-Fl. Mittel-europas, Heft 10, Aufl. 2, p. 204, fig. 295. 1930.

This entity has the same growth habit as the nominate variety. Specimens from Lake Michigan are usually in the upper size range according to descriptions given by most authors (see Patrick and Reimer 1966).

5 ACCLEVVR TOT NO OF STATIONS 74											
( 60973	CH	1876	0.04724 )	( 3540	CH	11MY1879	0.00466 )	( 3541	CH	1FE1881	0.00978 )
( 46921	CH	23NO1945	0.00065 )	( 46917	CH	12JA1946	0.00083 )	( 46915	CH	20FE1946	0.01138 )
( 46914	CH	19AP1946	0.00107 )	( 46924	CH	10MY1946	0.00071 )	( 46923	CH	22NO1946	0.00437 )
( 46920	CH	20DE1946	0.00062 )	( 46905	CH	JA1947	0.00245 )	( 46909	CH	MR1947	0.02732 )
( 46906	CH	MY1947	0.00398 )	( 46919	CH	5JN1947	0.00303 )	( 46907	CH	JL1947	0.00099 )
( 46922	CH	21AU1947	0.00097 )	( 46758	EV	5JN1937	0.00713 )	( 46757	EV	25JL1937	0.00481 )
( 46747	EV	1AU1937	0.00248 )	( 46763	EV	23AU1937	0.02029 )	( 46752	EV	15SE1937	0.00530 )
( 46760	EV	22SE1537	0.00492 )	( 46744	EV	60C1937	0.00975 )	( 46748	EV	13OC1937	0.00405 )
( 46767	EV	27OC1937	0.00387 )	( 46745	EV	12MR1938	0.01214 )	( 46768	EV	16MR1938	0.02940 )
( 46762	EV	18MR1938	0.08822 )	( 1244	F 1	11JN1964	0.00219 )	( 1245	F 2	11JN1964	0.00346 )
( 1246	F 3	11JN1964	0.00598 )	( 1258	F 1	6JL1964	0.00708 )	( 1268	E 2	15AU1964	0.00547 )
( 1270	F 1	10AU1964	0.00272 )	( 1285	F 1	15SE1964	0.01165 )	( 1303	E 6	13OC1964	0.00560 )
( 1305	F 2	11OC1964	0.00173 )	( 1511	E 2	1SE1967	0.00307 )	( 1512	E 3	1SE1967	0.00785 )
( 1536	E 2	24SE1967	0.00273 )	( 1541	E 2	11OC1967	0.00532 )	( 1542	E 3	11OC1967	0.01526 )
( 1385	GS 9	10MY1967	0.00235 )	( 1387	GS11	12MY1967	0.00792 )	( 1388	GS12	12MY1967	0.01810 )
( 1389	GS13	12MY1967	0.00516 )	( 1390	GS14	12MY1967	0.01174 )	( 1392	GS16	12MY1967	0.00308 )
( 1393	GS17	13MY1967	0.00548 )	( 1394	GS18	13MY1967	0.00516 )	( 1396	GS20	13MY1967	0.00074 )
( 1554	GS 1	30C1967	0.00356 )	( 1557	GS 4	30C1967	0.00374 )	( 1565	GS13	50C1967	0.02079 )
( 1567	GS15	50C1967	0.01270 )	( 1568	GS16	50C1967	0.00144 )	( 1569	GS17	50C1967	0.00297 )
( 1570	GS18	50C1967	0.00992 )	( 1571	GS19	60C1967	0.00176 )	( 1572	GS20	60C1967	0.00090 )
( 1574	GS22	60C1967	0.05753 )	( 1544	MU 1	20C1967	0.00238 )	( 1546	LU 1	20C1967	0.00502 )
( 1527	TR 1	20SE1967	0.03774 )	( 1529	KW 1	20SE1967	0.01199 )	( 1530	FR 1	24SE1967	0.03000 )
( 1545	WL 1	20C1967	0.05406 )	( 1550	MR 1	50C1967	0.04956 )	( 1553	SG 1	60C1967	0.02938 )
( 1426	MS 2	29MY1967	0.01050 )	( 1402	TR 2	6MY1967	0.00541 )	( 1354	GH 2	25AP1967	0.00345 )
( 1404	MG 2	10MY1967	0.01270 )	( 1405	ES 2	12MY1967	0.00645 )	(			

*Achnanthes conspicua* A. Mayer

*Achnanthes conspicua* A. Mayer, Bayrisch Kryptog. Forsch., 1:198, pl. 6, fig. 9, 10. 1919.

6 ACCONSPI TOT NO OF STATIONS 14

(46921	CH	23NO1945	0.00065 )	(46768	EV	16MR1938	0.01470 )	( 1279	E 1	16SE1964	C.00393 )
( 1511	F 2	1SE1967	0.00307 )	( 1565	GS13	50C1967	0.00507 )	( 1569	GS17	50C1967	C.00149 )
( 1574	GS22	6CC1967	0.00288 )	( 1547	MS 1	20C1967	0.00798 )	( 1526	PG 1	20SE1967	C.00569 )
( 1527	TR 1	20SE1967	0.00629 )	( 1530	FR 1	24SE1967	0.01000 )	( 1550	MR 1	50C1967	C.23541 )
( 1426	MS 2	29MY1967	0.01050 )	( 1350	BH 2	19AP1967	0.02863 )	(			

*Achnanthes conspicua* var. *brevistriata* Hust.

*Achnanthes conspicua* var. *brevistriata* Hustedtin: Pascher, Süßw.-Fl. Mitteleuropas, Heft 10, Aufl. 10, p. 202, fig. 292. 1930.

Coll: 983

*Achnanthes deflexa* Reim.

*Achnanthes deflexa* Reimer in: Patrick and Reimer, Acad. Nat. Sci. Philadelphia Monogr., 13:256, pl. 16, figs. 16-20. 1966.

7 ACCEFLEX TOT NO OF STATIONS 29

(46758	EV	5JN1937	0.04993 )	(46743	EV	20JN1937	0.00428 )	(46764	EV	17JL1937	C.00806 )
(46757	EV	25JL1937	0.02407 )	(46763	EV	23AU1937	0.08117 )	(46767	EV	27OC1937	C.00774 )
(46768	EV	16MR1938	0.01470 )	(46762	EV	18MR1938	0.02206 )	( 1244	F 1	11JN1964	C.00110 )
( 1245	F 2	11JN1964	0.00346 )	( 1258	F 1	6JL1964	0.00472 )	( 1260	F 3	6JL1964	C.00191 )
( 1285	F 1	15SE1964	0.00582 )	( 1387	GS11	12MY1967	0.01188 )	( 1398	GS22	14MY1967	C.00304 )
( 1562	GS10	50C1967	0.00247 )	( 1527	TR 1	20SE1967	0.01887 )	( 1530	FR 1	24SE1967	C.01000 )
( 1545	WL 1	20C1967	0.01351 )	( 1550	MR 1	50C1967	0.14868 )	( 1553	SG 1	60C1967	C.00734 )
( 1428	MU 2	29MY1967	0.00301 )	( 1426	MS 2	29MY1967	0.04199 )	( 1350	BH 2	19AP1967	C.00881 )
( 1401	PG 2	6MY1967	0.00588 )	( 1403	CA 2	10MY1967	0.02615 )	( 1404	PQ 2	10MY1967	C.03811 )
( 1405	ES 2	12MY1967	C.01935 )	( 1407	SP 2	14MY1967	0.00597 )	(			

*Achnanthes delicatula* (Kütz.) Grun.

*Achnanthidium delicatulum* Kützing, Bacill., p. 75, pl. 3, fig. 21. 1844.  
*Achnanthes delicatula* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):22. 1880.

8 ACDELICG TOT NO OF STATIONS 1

( 1550	MR 1	50C1967	0.03717 )	(
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*Achnanthes detha* Hohn and Hellerm.

*Achnanthes detha* Hohn and Hellerman, Trans. Amer. Micr. Soc., 82(3):274, pl. 2, figs. 7-8. 1963.

9 ACDETHAQ TOT NO OF STATIONS 2

( 1550	MR 1	50C1967	0.02478 )	( 1404	MS 2	10MY1967	0.01270 )	(
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*Achnanthes dispar* Cleve

*Achnanthes dispar* Cleve, Acta Soc. Fauna Fl. Fennica, 8(2):52, pl. 3, figs. 2-3. 1891.



10. ACDISPAR TOT NO OF STATIONS 1  
( 1388 GS12 12MY1967 0.00603 ) (

*Achnanthes exigua* Grun.

*Achnanthes exigua* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):21. 1880.

11. ACXIGUA TOT NO OF STATIONS 23  
( 46767 EV 270C1967 0.00387 ) ( 46762 EV 18MR1938 0.02206 ) ( 1258 F 1 6JL1964 C.00236 )  
( 1268 E 2 15AU1964 0.00274 ) ( 1341 A 3 19AP1967 C.00108 ) ( 1541 E 2 110C1967 C.01064 )  
( 1392 GS16 12MY1967 0.00308 ) ( 1357 GS21 12MY1967 C.00065 ) ( 1555 GS 2 30C1967 C.00353 )  
( 1565 GS13 50C1967 0.01521 ) ( 1571 GS19 60C1967 C.00059 ) ( 1573 GS21 60C1967 C.00112 )  
( 1575 GS28 60C1967 0.00129 ) ( 1546 LU 1 20C1967 C.00500 ) ( 1529 KW 1 20SE1967 C.03598 )  
( 1551 ES 1 50C1967 0.02396 ) ( 1550 MR 1 50C1967 C.07434 ) ( 1553 SG 1 60C1967 C.02203 )  
( 1351 M1 2 21AP1967 0.00310 ) ( 1417 HQ 2 22MY1967 0.00374 ) ( 1350 BH 2 19AP1967 C.00441 )  
( 1404 MQ 2 10MY1967 0.06352 ) ( 1407 SM 2 14MY1967 0.00597 ) (

*Achnanthes exigua* var. *heterovalva* Krasske

*Achnanthes exigua* var. *heterovalva* Krasske, Bot. Arch., 3(4):193, figs. 9a-b. 1923.

12. ACXIGVH TOT NO OF STATIONS 6  
( 1544 MU 1 20C1967 0.00238 ) ( 1522 BH 1 18SE1967 C.00365 ) ( 1545 WL 1 20C1967 C.00676 )  
( 1549 MQ 1 40C1967 0.01370 ) ( 1550 MR 1 50C1967 1.35051 ) ( 1350 BH 2 19AP1967 C.02863 )

*Achnanthes exigua* var. *heterovalva* fo. *semiaperta* Guer.

*Achnanthes exigua* var. *heterovalva* fo. *semiaperta* Guermeur, Cat. Inst. Français d'Afrique Noire, 12:32, pl. 2, figs. 3c, 3i, 3j. 1954.

13. ACXVHFS TOT NO OF STATIONS 3  
( 46906 CH MY1947 0.00066 ) ( 1571 GS19 60C1967 0.00117 ) ( 1575 GS28 60C1967 C.00129 )

*Achnanthes hauckiana* Grun.

*Achnanthes hauckiana* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):21. 1880.

14. ACHAUCKI TOT NO OF STATIONS 5  
( 1376 F 5 6MY1967 0.00281 ) ( 1544 MU 1 20C1967 0.00477 ) ( 1417 HQ 2 22MY1967 C.00374 )  
( 1350 BH 2 19AP1967 0.01101 ) ( 1354 GH 2 25AP1967 0.00345 ) (

15. ACHAUCKQ TOT NO OF STATIONS 1  
( 1305 F 2 110C1964 0.00173 ) (

*Achnanthes hauckiana* var. *rostrata* Schulz

*Achnanthes hauckiana* var. *rostrata* Schulz, Bot. Arch., 13:191, fig. 40. 1926.

16. ACHAUCVR TOT NO OF STATIONS 7  
( 1377 GS 1 9MY1967 0.00356 ) ( 1544 MU 1 20C1967 0.00238 ) ( 1547 PS 1 20C1967 C.00798 )  
( 1520 HQ 1 18SE1967 0.00471 ) ( 1545 WL 1 20C1967 0.00676 ) ( 1426 PS 2 25MY1967 C.C2100 )  
( 1350 BH 2 19AP1967 0.02203 ) (

*Achnanthes hungarica* (Grun.) Grun.

*Achnanthidium hungaricum* Grunow, Verh. Zool.-Bot. Ges. Wien, 13:146, pl. 4, figs. 8a-c. 1863.

*Achnanthes hungarica* (Grun.) Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):20. 1880.

18 ACHUNGAR TOT NO CF STATIONS 4									
( 1342	A 4	19AP1967	0.00180 )	( 1417	HO 2	22MY1967	0.00374 )	( 1350	BH 2
( 1406	GB 2	13MY1967	0.00270 )	(					19AP1967
									C.01322 )

*Achnanthes lanceolata* (Bréb.) Grun.

*Achnanthidium lanceolatum* de Brébisson ex Kützing, Sp. Alg. p. 54. 1849.

*Achnanthes lanceolata* (Bréb. ex Kütz.) Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):23. 1880.

19 ACLANCED TOT NO CF STATIONS 41									
( 46905	CH	JA1547	0.00123 )	( 46764	EV	17JL1937	0.01612 )	( 46757	EV
( 1317	E 1	6NO1964	0.00191 )	( 1408	A 3	23MY1967	0.00447 )	( 1410	A 6
( 1416	E 5	28MY1967	0.00219 )	( 1452	E 2	14JL1967	0.00213 )	( 1542	E 3
( 1555	GS 2	30C1967	0.00353 )	( 1559	GS 7	40C1967	0.00350 )	( 1571	GS19
( 1572	GS20	60C1967	0.00090 )	( 1574	GS22	60C1967	0.00288 )	( 1575	GS28
( 1544	MU 1	20C1967	0.00238 )	( 1546	LU 1	20C1967	0.01501 )	( 1521	SH 1
( 1522	BH 1	18SE1967	0.00365 )	( 1526	MO 1	20SE1967	0.01138 )	( 1527	TR 1
( 1529	KW 1	20SE1967	0.01199 )	( 1530	FR 1	24SE1967	0.01000 )	( 1545	WL 1
( 1549	MQ 1	40C1967	0.01370 )	( 1551	ES 1	50C1967	0.00799 )	( 1550	MR 1
( 1426	MS 2	29MY1967	0.08399 )	( 1427	LU 2	29MY1967	0.02421 )	( 1417	HO 2
( 1418	SH 2	22MY1967	0.01555 )	( 1350	BH 2	19AP1967	0.17621 )	( 1402	TR 2
( 1400	SB 2	6MY1967	0.01191 )	( 1352	KW 2	21AP1967	0.00859 )	( 1354	GH 2
( 1403	CA 2	10MY1967	0.01308 )	( 1404	MQ 2	10MY1967	0.02541 )	( 1405	ES 2
( 1406	GB 2	13MY1967	0.00539 )	( 1423	WA 2	25MY1967	0.00428 )	(	
									25JL1937
									C.00481 )
									24MY1967
									C.00564 )
									110C1967
									C.00509 )
									60C1967
									0.00059 )
									60C1967
									C.00258 )
									18SE1967
									0.01154 )
									20SE1967
									C.03774 )
									20C1967
									C.01351 )
									5CC1967
									1.44963 )
									22MY1967
									C.00748 )
									6MY1967
									C.01083 )
									25AP1967
									C.00690 )
									12MY1967
									C.01290 )

*Achnanthes lanceolata* var. *dubia* Grun.

*Achnanthes lanceolata* var. *dubia* Grunow in: Cleve and Grunow, K. Sven Vet.-Akad. Handl., Ny Följd, 17(2):23. 1880.

21 ACLANCVD TOT NO OF STATIONS 34									
( 1272	C* 1	10SE1964	0.00410 )	( 1274	D 1	17SE1964	0.00469 )	( 1279	E 1
( 1341	A 3	19AP1967	0.00325 )	( 1342	A 4	19AP1967	0.00361 )	( 1348	E 5
( 1449	C 3	16JL1967	0.00382 )	( 1532	A 3	18SE1967	0.00329 )	( 1538	E 5
( 1540	C 5	40C1967	0.00993 )	( 1541	E 2	110C1967	0.01064 )	( 1542	E 3
( 1398	GS22	14MY1967	0.00304 )	( 1554	GS 1	30C1967	0.01779 )	( 1558	GS 5
( 1559	GS 7	40C1967	0.00350 )	( 1571	GS19	60C1967	0.00293 )	( 1574	GS22
( 1544	MU 1	20C1967	0.00477 )	( 1547	MS 1	20C1967	0.03194 )	( 1546	LU 1
( 1522	BH 1	18SE1967	0.00547 )	( 1526	MO 1	20SE1967	0.00569 )	( 1527	TR 1
( 1529	KW 1	20SE1967	0.02398 )	( 1530	FR 1	24SE1967	0.02000 )	( 1545	WL 1
( 1550	MR 1	50C1967	2.37889 )	( 1553	SG 1	66C1967	0.00734 )	( 1426	MS 2
( 1417	HO 2	22MY1967	0.02243 )	( 1350	BH 2	19AP1967	0.38766 )	( 1354	GH 2
( 1404	MQ 2	10MY1967	0.10163 )	(					25AP1967
									C.00173 )

25 ACLANCVR TOT NO OF STATIONS 4									
( 1264	C* 1	10AU1964	0.00193 )	( 1301	E 4	130C1964	0.00442 )	( 1306	F 3
( 1404	MQ 2	10MY1967	0.02541 )	(					110C1964
									C.00277 )

*Achnanthes lanceolata* var. *elliptica* Cleve

*Achnanthes lanceolata* var. *elliptica* Cleve, Acta Soc. Fauna Fl. Fennica, 8(2):51, pl. 3, figs. 10, 11. 1891.

22 ACLANCVE TOT NO CF STATIONS 10									
( 1342	A 4	15AP1967	0.00180 )	( 1449	C 3	16JL1967	0.00764 )	( 1452	E 2
( 1533	A 4	19SE1967	0.00464 )	( 1538	E 5	23SE1967	0.00552 )	( 1384	GS 8
( 1554	GS 1	30C1967	0.00712 )	( 1571	GS19	60C1967	0.00059 )	( 1573	GS21
( 1404	MQ 2	10MY1967	0.01270 )	(					14JL1967
									C.00426 )
									10MY1967
									C.00185 )
									60C1967
									C.00112 )

*Achnanthes lanecolata* var. *haynaldii* (Schaarsch.) Cleve

*Achnanthes haynaldii* Schaarschmidt, Magyar Növényzeti Lapok, 5(50):20. 1881.  
*Achnanthes lanceolata* var. *haynaldii* (Schaarsch.) Cleve, Diatomiste, 2(17):  
 99, pl. 7, figs. 14a-b. 1894.

23 ACLANCVM TOT NO OF STATIONS 1				
( 1565	GS13	50C1967	0.00507 )	(

*Achnanthes lanceolata* var. *omissa* Reim.

*Achnanthes lanceolata* var. *omissa* Reimer in: Patrick and Reimer, Acad.  
 Nat. Sci. Philadelphia Monogr., 13:272, pl. 18, figs. 16, 17. 1966.

24 ACLANCVC TOT NO OF STATIONS 20											
( 1305	F 2	110C1964	0.00173 )	( 1565	GS13	50C1967	0.44620 )	( 1566	GS14	50C1967	C.00367 )
( 1567	GS15	50C1967	0.00159 )	( 1569	GS17	50C1967	0.00149 )	( 1573	GS21	60C1967	C.00112 )
( 1574	GS22	60C1967	0.00575 )	( 1575	GS28	60C1967	0.00129 )	( 1544	MU 1	20C1967	C.00238 )
( 1547	MS 1	20C1967	0.01597 )	( 1524	MI 1	20SE1967	0.02189 )	( 1521	SH 1	18SE1967	C.00577 )
( 1550	MR 1	50C1967	0.79296 )	( 1553	SG 1	60C1967	0.00734 )	( 1428	MU 2	29MY1967	C.00301 )
( 1427	LU 2	29MY1967	0.01211 )	( 1350	BH 2	19AP1967	0.01762 )	( 1402	TR 2	6MY1967	C.00541 )
( 1354	GH 2	25AP1967	0.00173 )	( 1404	MQ 2	10MY1967	0.02541 )	(			

*Achnanthes lanceolata* var. *robusta* Hust.

*Achnanthes lanceolata* var. *robusta* Hustedt, Arch. Hydrobiol., Suppl.  
 15:202, pl. 13, figs. 47-49. 1938.

20 ACLANCVB TOT NO OF STATIONS 2									
( 1550	MR 1	50C1967	C.30975 )	( 1426	MS 2	29MY1967	0.03150 )	(	

*Achnanthes lanceolatoides* Sov.

*Achnanthes lanceolatoides* Sovereign, Trans. American Micr. Soc., 77(2):  
 115, pl. 2, figs. 18, 19. 1958.

26 ACLANTCQ TOT NO OF STATIONS 1				
( 1567	GS15	50C1967	0.00159 )	(

*Achnanthes laterostrata* Hust.

*Achnanthes laterostrata* Hustedt in: Rabenhorst, Kryptog.-Fl. Deutschland,  
 7(2)3:392, fig. 840. 1933.

28 ACLATERO TOT NO OF STATIONS 1				
( 1574	GS22	60C1967	0.00575 )	(

*Achnanthes lauenburgiana* Hust.

*Achnanthes lauenburgiana* Hustedt, Abh. Naturw. Ver. Bremen, 33(3):451,  
 figs. 1-6. 1944.

29 ACLAUENB TOT NO OF STATIONS 9											
( 1268	E 2	15AU1964	0.00274 )	( 1305	F 2	110C1964	0.00173 )	( 1383	GS 7	10MY1967	C.00267 )
( 1572	GS20	60C1967	0.00090 )	( 1574	GS22	60C1967	0.00288 )	( 1544	MU 1	20C1967	C.00238 )
( 1546	LU 1	20C1967	C.00500 )	( 1527	TR 1	20SE1967	0.00629 )	( 1530	FR 1	24SE1967	C.01000 )

*Achnanthes lemmermanni* Hust.

*Achnanthes lemmermanni* Hustedt in: Rabenhorst, Kryptog.-Fl. Deutschland, 7(2)3:390, fig. 837. 1933.

30. ACLEMMER ICT NO OF STATIONS 2

( 1426 MS 2 25MY1967 0.07349 ) ( 1350 BH 2 19AP1967 0.00220 ) (

31. ACLEMMER ICT NO OF STATIONS 1

( 1547 MS 1 20C1967 0.00798 ) (

*Achnanthes linearis* (Wm. Smith) Grun.

*Achnanthidium lineare* Wm. Smith, Ann. Mag. Nat. Hist., Ser. 2, 15:8, pl. 1, fig. 9. 1855.

*Achnanthes linearis* (Wm. Smith) Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):23. 1880.

32. ACLINEAR ICT NO OF STATIONS 55

( 46909	CH	MR1947	0.00455 )	( 46906	CH	MY1947	0.00199 )	( 46919	CH	5JN1947	0.02428 )
( 46907	CH	JL1947	0.00045 )	( 46922	CH	21AU1947	0.00194 )	( 46743	EV	20JN1937	0.00428 )
( 46770	EV	9JL1937	0.00596 )	( 46764	EV	17JL1937	0.02417 )	( 46757	EV	25JL1937	0.01444 )
( 46747	EV	1AU1937	0.00248 )	( 46763	EV	23AU1937	0.14205 )	( 46765	EV	30AU1937	0.00558 )
( 46752	EV	15SE1937	0.26121 )	( 46767	EV	27OC1937	0.01934 )	( 46768	EV	16MR1938	0.10290 )
( 46762	EV	18MR1938	0.08822 )	( 46751	EV	30MR1938	0.02233 )	( 1243	E 6	13JN1964	0.00626 )
( 1258	F 1	6JL1964	0.00236 )	( 1260	F 3	6JL1964	0.00191 )	( 1285	F 1	15SE1964	0.02912 )
( 1304	F 1	11OC1964	0.00494 )	( 1343	A 6	19AP1967	0.00069 )	( 1512	E 3	1SE1967	0.00393 )
( 1536	E 2	24SE1967	0.00273 )	( 1352	GS16	12MY1967	0.00308 )	( 1554	CS 1	30C1967	0.00356 )
( 1555	GS 2	3CC1967	0.00353 )	( 1558	GS 5	40C1967	0.00396 )	( 1561	ES 9	40C1967	0.00587 )
( 1565	GS13	50C1967	0.01014 )	( 1569	GS17	50C1967	0.00149 )	( 1570	GS18	50C1967	0.00396 )
( 1571	GS19	60C1967	0.00059 )	( 1573	GS21	60C1967	0.00112 )	( 1574	GS22	60C1967	0.00288 )
( 1575	GS28	60C1967	0.00125 )	( 1544	MU 1	20C1967	0.00238 )	( 1546	LU 1	20C1967	0.01000 )
( 1521	SH 1	18SE1967	0.00577 )	( 1523	RA 1	19SE1967	0.00923 )	( 1527	TR 1	20SE1967	0.03774 )
( 1528	SB 1	20SE1967	0.01444 )	( 1529	KW 1	20SE1967	0.02398 )	( 1548	CA 1	30C1967	0.01272 )
( 1551	ES 1	50C1967	0.04793 )	( 1552	SM 1	60C1967	0.01981 )	( 1550	MR 1	50C1967	0.04960 )
( 1553	SG 1	60C1967	0.00734 )	( 1426	MS 2	29MY1967	0.01050 )	( 1350	BH 2	19AP1967	0.17621 )
( 1352	KW 2	21AP1967	0.00859 )	( 1404	MC 2	10MY1967	0.03811 )	( 1405	ES 2	12MY1967	0.00645 )
( 1349	CI 2	15AP1967	0.00355 )	(							

*Achnanthes linearis* fo. *curta* H. L. Smith

*Achnanthes linearis* fo. *curta* H. L. Smith in: Boyer, Diat. Philadelphia, p. 59, figs. 16-17. 1916.

33. ACLINEFC ICT NO OF STATIONS 3

( 46919 CH 5JN1947 0.00303 ) ( 46758 EV 5JN1937 0.01426 ) ( 1305 F 2 11OC1964 0.00518 )

*Achnanthes marginulata* Grun.

*Achnanthes marginulata* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):21. 1880.

34. ACMARGIN ICT NO OF STATIONS 2

( 1565 GS13 50C1967 0.01014 ) ( 1553 SG 1 60C1967 0.01469 ) (

*Achnanthes microcephala* (Kütz.) Grun.

*Achnanthidium microcephalum* Kützing, Bacill., p. 75, pl. 3, figs. 13, 19. 1844.

*Achnanthes microcephala* (Kütz.) Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):22. 1880.

35. ACMICROCC ICT NO OF STATIONS 2

( 1244 F 1 11JN1964 0.00658 ) ( 1403 CA 2 10MY1967 0.34000 ) (

50. ACSPECOL TOT NO OF STATIONS 7

( 1258	F 1	6JL1964	0.03304 )	( 1260	F 3	6JL1964	0.00382 )	( 1270	F 1	10AU1964	0.03812 )
( 1304	F 1	11OC1964	0.00494 )	( 1305	F 2	11OC1964	0.00173 )	( 1306	F 3	11OC1964	0.00277 )
( 1381	GS 5	10MY1967	0.00477 )	(							

*Achnanthes minutissima* Kütz.

*Achnanthes minutissima* Kützling, Linnaea, 8:578, pl. 16, fig. 54. 1833.

36 ACMINUTI TOT NO OF STATIONS 59											
( 46924	CH	10MY1946	0.00141 )	( 46523	CH	22NO1946	0.00219 )	( 46920	CH	20DE1946	0.00154 )
( 46909	CH	MR1947	0.00455 )	( 46516	CH	4MY1947	0.00034 )	( 46919	CH	5JN1947	1.47949 )
( 46913	CH	6AU1947	0.03138 )	( 46758	EV	5JN1937	0.14264 )	( 46770	EV	9JL1937	0.08946 )
( 46764	EV	17JL1937	0.82192 )	( 46757	EV	25JL1937	0.22146 )	( 46747	EV	1AU1937	0.02228 )
( 46763	EV	23AU1937	2.27273 )	( 46752	EV	15SE1937	0.26121 )	( 46760	EV	22SE1937	0.01477 )
( 46748	EV	13OC1937	0.04270 )	( 46767	EV	27OC1937	0.00774 )	( 46749	EV	12MR1938	0.02427 )
( 46768	EV	16MR1938	0.07350 )	( 46762	EV	18MR1938	0.17644 )	( 46756	EV	27AP1938	0.00168 )
( 46766	EV	14CE1938	0.02165 )	( 1244	F 1	11JN1964	0.00219 )	( 1256	E 2	14JL1964	0.00183 )
( 1258	F 1	6JL1964	0.00708 )	( 1262	B 3	17AU1964	0.00210 )	( 1322	E 6	7NO1964	0.00333 )
( 1323	F 1	6NO1964	0.00279 )	( 1341	A 3	19AP1967	0.00108 )	( 1554	GS 1	30C1967	0.00712 )
( 1555	GS 2	30C1967	0.00353 )	( 1570	GS18	50C1967	0.01983 )	( 1574	GS22	60C1967	0.00575 )
( 1575	GS28	60C1967	0.00129 )	( 1546	LU 1	20C1967	0.00903 )	( 1523	RA 1	19SE1967	0.00923 )
( 1525	PW 1	20CE1967	0.01392 )	( 1526	MO 1	20SE1967	0.00569 )	( 1527	TR 1	20SE1967	0.00501 )
( 1528	SB 1	20CE1967	0.02888 )	( 1529	KW 1	20SE1967	0.57561 )	( 1530	FR 1	24SE1967	0.02002 )
( 1545	WL 1	20C1967	0.05406 )	( 1549	MC 1	40C1967	0.12334 )	( 1551	ES 1	50C1967	0.01598 )
( 1552	SM 1	60C1967	0.00660 )	( 1550	MR 1	50C1967	1.09032 )	( 1553	SG 1	60C1967	0.02203 )
( 1426	MS 2	29MY1967	0.05249 )	( 1427	LU 2	29MY1967	0.01211 )	( 1350	BH 2	19AP1967	0.11674 )
( 1352	KW 2	21AP1967	0.01718 )	( 1354	GH 2	25AP1967	0.00345 )	( 1403	CA 2	10MY1967	0.00514 )
( 1404	MC 2	10MY1967	0.02541 )	( 1405	ES 2	12MY1967	0.00645 )	( 1407	SM 2	14MY1967	0.00597 )
( 1406	GB 2	13MY1967	0.00270 )	( 1423	WA 2	25MY1967	0.00428 )	(			

*Achnanthes minutissima* var. *cryptocephala* Grun.

*Achnanthes minutissima* var. *cryptocephala* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 27, figs. 41-44. 1880.

37 ACMINLVC TCT NO OF STATIONS 13											
( 46758	EV	5JN1937	0.00357 )	( 46757	EV	25JL1937	0.00963 )	( 46763	EV	23AU1937	0.02029 )
( 1260	F 3	6JL1964	0.00191 )	( 1542	E 3	11OC1967	0.01017 )	( 1387	GS11	12MY1967	0.00396 )
( 1389	GS13	12MY1967	0.00258 )	( 1394	GS18	13MY1967	0.00172 )	( 1568	GS16	50C1967	0.00144 )
( 1549	MQ 1	40C1967	0.02741 )	( 1551	ES 1	50C1967	0.01598 )	( 1403	CA 2	10MY1967	0.00539 )
( 1404	MQ 2	10MY1967	0.03811 )	(							

*Achnanthes nollii* Bock

*Achnanthes nollii* Bock, Nachr. Naturw. Mus. Aschaffenburg, 38:54, pl. 2, figs. 1-2; pl. 5, figs. 7-9. 1953.

38 ACNCLLII TOT NO OF STATIONS 4											
( 1549	MQ 1	4CC1967	0.01370 )	( 1403	CA 2	10MY1967	0.03923 )	( 1404	MQ 2	10MY1967	0.01270
( 1405	ES 2	12MY1967	0.00645 )	(							

47 ACSPECCI TOT NO CF STATIONS 3											
( 1258	F 1	6JL1964	C.00236 )	( 1285	F 1	15SE1964	0.10483 )	( 1287	F 3	15SE1964	C.00500 )

*Achnanthes oestrupii* (A. Cl.) Hust.

*Achnanthes lanceolata* var. *oestrupii* A. Cleve-Euler, Acta Forest. Fennica, 22:53, pl. 1, fig. 1. 1922.

*Achnanthes oestrupii* (A. Cl.) Hustedt in: Pascher, Süßw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 207, fig. 301. 1930.

35 ACCESTRU TOT NO OF STATIONS 4											
( 1388	GS12	12MY1967	0.01207 )	( 1389	GS13	12MY1967	0.00258 )	( 1558	GS 5	40C1967	0.00396 )
( 1404	MQ 2	10MY1967	0.02541 )	(							

*Achnanthes peragalli* Brun

*Achnanthes peragalli* Brun in: Héribaud, Diat. Auvergne, p. 50, pl. 1, fig. 4. 1893.

40 ACPERAGA TOT NO OF STATIONS 2										
( 1550	MR 1	50C1967	0.02478 )	( 1404	MQ 2	10MY1967	0.01270 )	(		

*Achnanthes peragalli* var. *fossilis* Temp. and Perag.

*Achnanthes peragalli* var. *fossilis* Tempere and Peragallo, Diat. Monde  
Entier, 2nd. ed., p. 113. 1909.

Coll: 982.

*Achnanthes pinnata* Hust.

*Achnanthes pinnata* Hustedt in: Hedin, Southern Tibet, vol. 6, pt. 3,  
p. 123, pl. 9, figs. 15-18. 1922.

41 ACPINNAT TOT NO OF STATIONS 7

( 146752	EV	15SE1937	0.02177 )	( 1439	B 6	5JN1964	C.00200 )	( 1279	E 1	16SE1964	C.00393 )
( 1285	F 1	15SE1964	0.00582 )	( 1533	A 4	19SE1967	0.00464 )	( 1550	MR 1	50C1967	0.01239 )
( 1350	BH 2	19AP1967	0.00220 )	(							

*Achnanthes ploenensis* Hust.

*Achnanthes ploenensis* Hustedt in: Pascher, Süßw.-Fl. Mitteleuropas,  
Heft 10, Aufl. 2, p. 199, fig. 280. 1930.

42 ACPLORAG TCT NC CF STATIONS 1

( 1550	MR 1	50C1967	0.16107 )	(
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*Achnanthes sublaevis* Hust.

*Achnanthes sublaevis* Hustedt, Bot. Archiv. 38:180, figs. 15-16. 1937.

49 ACSPECK TCT NO OF STATIONS 3

( 1565	GS13	50C1967	0.00507 )	( 1549	MQ 1	40C1967	0.01370 )	( 1405	ES 2	12MY1967	C.00645 )
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### Species incertae sedis

*Achnanthes* sp. #1.

43 ACSPECOA TCT NO OF STATIONS 1

( 1547	MS 1	20C1967	0.00798 )	(
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*Achnanthes* sp. #6.

44 ACSPECOF TOT NC CF STATIONS 2

( 1265	C* 2	10AU1964	0.00224 )	( 1350	BH 2	19AP1967	0.00441 )	(
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*Achnanthes* sp. #7.

45 ACSPECCG TOT NO OF STATIONS 4

( 1259	F 2	6JL1964	0.00310 )	( 1260	F 3	6JL1964	0.00191 )	( 1270	F 1	10AU1964	0.00272 )
( 1403	CA 2	10MY1967	0.02615 )	(							

*Achnanthes* sp. #10.

48 ACSPECCJ TCT NO OF STATIONS 2

( 1285	F 1	15SE1964	0.00582 )	( 1565	GS13	50C1967	0.00507 )	(
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*Achnanthes* sp. #13.

51 ACSPECCM TOT NO OF STATIONS 2									
( 46915	CH	20FE1946	0.00565 )	( 46914	CH	19AP1946	0.00107 )	(	

*Achnanthes* sp. #14.

52 ACSPECON TOT NO OF STATIONS 1									
( 1380	GS 4	9MY1967	0.00168 )	(					

*Achnanthes* sp. #15.

53 ACSPECCO TOT NO OF STATIONS 2									
( 1394	GS18	13MY1967	0.00172 )	( 1397	GS21	13MY1967	0.00065 )	(	

*Achnanthes* sp. #16.

54 ACSPECCP TOT NO OF STATIONS 2									
( 1571	GS19	60C1967	0.00117 )	( 1550	MR 1	50C1967	0.08673 )	(	

*Achnanthes* sp. #17.

55 ACSPECCQ TOT NO OF STATIONS 1									
( 1550	MR 1	50C1967	0.16107 )	(					

*Achnanthes* sp. #18.

56 ACSPECCR TOT NO OF STATIONS 1									
( 1350	BH 2	19AP1967	0.00220 )	(					

Genus *Amphipleura* Kütz.  
Kützing, Bacill., p. 103. 1844.

Most freshwater species of the genus *Amphipleura* find their primary habitat in periphyton communities. The two members of the genus that occur in our collections usually grow enclosed in gelatinous tubes. In eutrophied portions of Lake Michigan sizable populations of *A. pellucida* are often taken in plankton collections and these cells seem to be entirely free-living.

*Amphipleura artica* Patr. and Freese

*Amphipleura artica* Patrick and Freese, Proc. Acad. Nat. Sci. Philadelphia, 112:170, pl. 1, fig. 14. 1960.

57 APARTICA TOT NO OF STATIONS 5											
(46921	CH	23NO1945	0.00065 )	(46915	CH	20FE1946	0.38 )	(46923	CH	22NO1946	0.00437 )
(46919	CH	5JN1947	0.00910 )	(46768	EV	16MR1938	0.00030 )	(			

*Amphipleura pellucida* (Kütz.) Kütz.

*Frustulia pellucida* Kützting, Linnaea, 8:543, pl. 13, fig. 11. 1833.

*Amphipleura pellucida* (Kütz.) Kützting, Bacill., p. 103, pl. 3, fig. 52. 1844.

78 APPELLUC TCT AC CF STATIONS 209

(60973	CH	1876	0.09447	(46521	CH	23NO1945	C.00388	(469C8	CH	DE1945	C.01007
(46915	CH	20FE1946	0.01707	(46914	CH	19AP1946	0.00107	(46923	CH	22NO1946	C.01530
(46920	CH	20DE1946	0.00031	(46512	CH	AP1947	0.01150	(46919	CH	5JN1947	C.00910
(46922	CH	21AU1947	0.00048	(46764	EV	17JL1937	0.01612	(46747	EV	1AU1937	C.00495
(46752	EV	15SE1937	0.02177	(46762	EV	18MR1938	0.02206	(46766	EV	14DE1938	C.03169
(1223	B 3	18MY1964	0.01250	(1224	B 4	18MY1964	0.01372	(1225	C 6	15MY1964	C.01568
(1226	C 7	16MY1964	0.00381	(1227	C* 2	13MY1964	0.00548	(1228	D 2	14MY1964	C.00973
(1229	D 5	14MY1964	0.13322	(1230	E 2	16MY1964	0.02371	(1231	E 3	16MY1964	C.03180
(1232	E 5	16MY1964	0.03131	(1233	B 3	5JA2964	0.02143	(1234	B 3	18JN1964	C.02812
(1235	C 7	16JN1964	0.00847	(1439	B 6	5JN1964	0.01399	(1236	C* 1	8JN1964	C.02625
(1237	C* 2	8JN1964	0.05672	(1238	D 3	11JN1964	0.01200	(1239	D 4	11JN1964	C.01741
(1240	D 6	10JN1964	0.04295	(1241	E 2	13JN1964	0.01183	(1242	E 3	13JN1964	C.00450
(1243	E 6	13JN1964	0.03550	(1244	F 1	11JN1964	0.02193	(1245	F 2	11JN1964	C.06915
(1246	F 3	11JN1964	0.12550	(1247	B 3	14JL1964	0.00854	(1440	B 6	11JL1964	C.00369
(1441	B 6	24JL1964	0.00441	(1250	C 6	10JL1964	0.01644	(1251	C 7	16JL1964	C.00290
(1253	C* 2	16JL1964	C.01598	(1254	C 2	15JL1964	0.01724	(1255	D 5	15JL1964	C.03850
(1256	E 2	14JL1964	0.02565	(1257	E 3	14JL1964	0.01436	(1258	F 1	6JL1964	C.03540
(1258	F 2	6JL1964	0.09916	(1260	F 3	6JL1964	0.07449	(1264	C* 1	10AU1964	C.00193
(1266	D 3	18AU1964	0.01754	(1267	D 6	18AU1964	0.00216	(1268	E 2	15AU1964	C.02462
(1269	E 3	15AU1964	0.00822	(1271	C 7	22SE1964	C.00653	(1272	C* 1	10SE1964	C.00410
(1274	D 1	17SE1964	0.01408	(1275	D 2	17SE1964	0.00645	(1276	D 3	18SE1964	C.01118
(1277	D 4	18SE1964	0.00620	(1278	D 6	18SE1964	C.00384	(1279	E 1	16SE1964	C.01571
(1280	E 2	16SE1964	0.00681	(1283	E 5	16SE1964	0.01839	(1284	E 6	17SE1964	0.04766
(1285	F 1	15SE1964	0.04659	(1286	F 2	15SE1964	0.01095	(1287	F 3	15SE1964	C.02502
(1445	B 6	14OC1964	0.02283	(1289	C 7	14OC1964	0.00879	(1290	C* 1	16OC1964	C.00379
(1293	D 2	15OC1964	0.00472	(1294	D 3	15OC1964	0.01978	(1295	D 4	15OC1964	C.00595
(1296	D 5	14OC1964	0.00393	(1297	D 6	14OC1964	0.00952	(1298	E 1	12OC1964	C.00539
(1299	E 2	12OC1964	0.00314	(1301	E 4	13OC1964	C.02208	(1302	E 5	13OC1964	C.00932
(1303	E 6	13OC1964	0.02799	(1304	F 1	11CC1964	0.00988	(1305	F 2	11OC1964	C.00345
(1306	F 3	11OC1964	0.01663	(1307	B 6	NO1964	0.01082	(1308	C 7	6NO1964	C.01825
(1316	D 6	9NO1964	0.00378	(1317	E 1	6NO1964	0.00191	(1318	E 2	7NO1964	C.00190
(1319	E 3	7NO1964	0.01309	(1320	E 4	7NO1964	0.00207	(1321	E 5	7NO1964	C.00319
(1322	E 6	7NO1964	0.02999	(1323	F 1	6NO1964	0.00418	(1324	F 2	6NO1964	C.00466
(1325	F 3	6NO1964	0.00252	(1336	C 3	27JAL1967	0.00578	(1337	C 3	2MR1967	0.01911
(1338	C 3	28MR1967	0.01851	(1339	C 5	28MR1967	0.02494	(1340	C 7	2MR1967	C.00509
(1341	A 3	19AP1967	0.01193	(1342	A 4	19AP1967	0.02346	(1343	A 6	19AP1967	C.00139
(1344	C 3	25AP1967	0.00331	(1345	C 5	25AP1967	C.07017	(1346	C 7	21AP1967	C.00534
(1347	E 2	23AP1967	0.01301	(1348	E 5	23AP1967	0.02056	(1368	A 3	4MY1967	C.00943
(1369	A 4	4MY1967	0.00373	(1370	A 6	3MY1967	0.01611	(1372	C 5	5MY1967	C.01773
(1374	E 2	7MY1967	0.00598	(1375	E 3	7MY1967	0.00962	(1376	E 5	6MY1967	C.01124
(1410	A 6	24MY1967	0.00564	(1411	C 3	31MY1967	0.00821	(1412	C 5	31MY1967	C.04209
(1414	E 2	28MY1967	0.01343	(1415	E 3	28MY1967	0.00225	(1416	E 5	28MY1967	C.00219
(1431	A 3	12JN1967	C.01030	(1432	A 4	13JN1967	0.03576	(1433	C 3	17JN1967	C.05167
(1434	C 5	17JN1967	0.05084	(1435	C 7	13JN1967	0.00947	(1436	E 2	15JN1967	C.00362
(1437	E 3	15JN1967	0.00269	(1438	E 5	14JN1967	0.01452	(1446	A 3	11JL1967	C.01712
(1447	A 4	11JL1967	0.03275	(1448	A 6	10JL1967	0.00354	(1449	C 3	16JL1967	C.01911
(1450	C 5	16JL1967	0.15424	(1452	E 2	14JL1967	0.01277	(1453	E 3	15JL1967	C.01517
(1505	C 5	2SE1967	0.00505	(1511	E 2	1SE1967	C.01228	(1512	E 3	1SE1967	C.00785
(1513	E 5	31AU1967	0.00507	(1536	E 2	24SE1967	0.00818	(1542	E 3	11OC1967	C.00509
(1378	GS 2	9MY1967	0.00421	(1379	GS 3	9MY1967	C.00928	(1380	GS 4	9MY1967	C.00336
(1381	GS 5	10MY1967	0.00477	(1383	GS 7	10MY1967	0.00267	(1384	GS 8	10MY1967	C.00370
(1385	GS 9	10MY1967	0.01177	(1386	GS10	12MY1967	0.00862	(1387	GS11	12MY1967	C.05149
(1388	GS12	12MY1967	0.00603	(1389	GS13	12MY1967	0.01547	(1390	GS14	12MY1967	C.00587
(1391	GS15	12MY1967	0.02394	(1392	GS16	12MY1967	0.00616	(1393	GS17	13MY1967	C.01918
(1394	GS18	13MY1967	0.18578	(1395	GS19	13MY1967	0.04932	(1396	GS20	13MY1967	C.00148
(1397	GS21	13MY1967	0.00458	(1398	GS22	14MY1967	0.03947	(1554	GS 1	3OC1967	C.02846
(1555	GS 2	3OC1967	C.01059	(1557	GS 4	3OC1967	0.00374	(1559	GS 7	4OC1967	C.00350
(1562	GS10	5OC1967	0.01234	(1563	GS11	5OC1967	C.09821	(1566	GS14	5OC1967	C.00183
(1567	GS15	5OC1967	0.00635	(1568	GS16	5OC1967	0.11255	(1569	GS17	5OC1967	C.34784
(1570	GS18	5OC1967	0.30742	(1571	GS19	6OC1967	C.09074	(1572	GS20	6OC1967	C.02794
(1573	GS21	6OC1967	0.17359	(1574	GS22	6OC1967	0.00863	(1575	GS28	6OC1967	C.36125
(1521	SH 1	18SE1967	0.00577	(1523	RA 1	15SE1967	0.00923	(1526	MO 1	2CSE1967	C.01707
(1551	ES 1	5OC1967	0.15177	(1552	SM 1	6OC1967	0.02641	(1550	MR 1	5OC1967	C.43365
(1553	SG 1	6OC1967	0.11751	(1426	MS 2	29MY1967	0.02100	(1351	PI 2	21AP1967	C.00310
(1427	LU 2	29MY1967	0.08475	(1417	HO 2	22MY1967	0.00374	(1425	RA 2	25MY1967	C.00884
(1401	MO 2	6MY1967	0.00588	(1402	TR 2	6MY1967	C.01083	(1352	KW 2	21AP1967	C.01718
(1353	FR 2	23AP1967	0.02110	(1354	GH 2	25AP1967	0.00173	(1429	WL 2	29MY1967	C.01062
(1403	CA 2	10MY1967	0.02615	(1405	ES 2	12MY1967	0.05805	(1407	SM 2	14MY1967	C.04777
(1349	CI 2	19AP1967	0.00359	(1419	BU 2	23MY1967	0.05492	(1422	GA 2	23MY1967	C.00511
(1423	WA 2	25MY1967	0.00856	(1424	KN 2	25MY1967	0.02665				



Genus *Amphiprora* Ehr.  
Ehrenberg, Ber. Akad. Wiss. Berlin, 1840:10. 1841.

The single species of the genus *Amphiprora* that occurs in our collections finds its primary habitat in the epipellic community. It is, however, a successful facultative plankton and a few specimens can be found in many plankton collections from the Great Lakes. Because of its striking morphology it is easily identified and is more widely reported than many more abundant euplanktonic species.

*Amphiprora ornata* Bailey

*Amphiprora ornata* Bailey, Smithson. Cont. Knowl., 2:38, pl. 2, figs. 15, 23. 1851.

79. ARCRNATA IGT NO OF STATIONS 115											
160973	CH	1876	0.07085	1	3540	CH	11MY1879	0.02330	1	3541	CH
146910	CH	CC1945	0.00109	1	46521	CH	23NO1945	0.02975	1	46908	CH
146917	CH	12JA1946	0.00638	1	46514	CH	19AP1946	0.04378	1	46924	CH
146923	CH	22NO1946	0.20326	1	46520	CH	20DE1946	0.01356	1	46905	CH
146909	CH	MR1947	0.03642	1	46512	CH	AP1947	0.01150	1	46916	CH
146906	CH	MY1947	0.01460	1	46519	CH	5JN1947	0.00455	1	46907	CH
146922	CH	21AU1947	0.00872	1	46758	EV	5JN1937	0.02496	1	46771	EV
146743	EV	20JN1937	0.02141	1	46745	EV	3JL1937	0.08359	1	46770	EV
146764	EV	17JL1937	0.12892	1	46757	EV	25JL1937	0.00963	1	46747	EV
146763	EV	23AU1937	0.02029	1	46765	EV	30AU1937	0.08366	1	46752	EV
146760	EV	22SE1937	0.01970	1	46750	EV	24SE1937	0.00471	1	46744	EV
146748	EV	13OC1937	0.02135	1	46767	EV	27OC1937	0.01934	1	46768	EV
146756	EV	27AP1938	0.00336	1	46759	EV	19MY1938	0.00338	1	46761	EV
1225	C 6	15MY1964	0.00392	1	1228	C 2	14MY1964	0.00195	1	1229	D 5
1230	E 2	16MY1964	0.00593	1	1231	E 3	16MY1964	0.00245	1	1232	E 5
1234	B 3	18JN1964	0.00843	1	1240	D 6	10JN1964	0.00153	1	1244	F 1
1248	B 3	24JL1964	0.00197	1	1440	B 6	11JL1964	0.00369	1	1249	C 3
1254	D 2	15JL1964	0.00383	1	1256	E 2	14JL1964	0.00366	1	1257	E 3
1258	F 1	6JL1964	0.00944	1	1260	F 2	6JL1964	0.00382	1	1285	F 1
1297	D 6	14OC1964	0.00381	1	1306	F 3	11OC1964	0.00277	1	1310	C* 2
1313	D 3	9NO1964	0.00193	1	1318	E 2	7NO1964	0.00190	1	1320	E 4
1321	E 5	7NO1964	0.00319	1	1339	C 5	28MR1967	0.00312	1	1344	C 3
1371	C 3	4MY1967	0.00231	1	1376	E 5	6MY1967	0.00281	1	1409	A 4
1410	A 6	24MY1967	0.00564	1	1412	C 5	31MY1967	0.00421	1	1413	C 7
1432	A 4	13JN1967	0.00255	1	1436	E 2	15JN1967	0.00362	1	1446	A 2
1447	A 4	11JL1967	0.00234	1	1450	C 5	16JL1967	0.00762	1	1379	GS 3
1382	GS 6	10MY1967	0.00278	1	1383	GS 7	10MY1967	0.00267	1	1387	GS11
1388	GS12	12MY1967	0.10256	1	1389	GS13	12MY1967	0.00258	1	1390	GS14
1391	GS15	12MY1967	0.00352	1	1392	GS16	12MY1967	0.01849	1	1393	GS17
1394	GS18	13MY1967	0.07741	1	1395	GS19	13MY1967	0.01996	1	1396	GS20
1397	GS21	13MY1967	0.00589	1	1398	GS22	14MY1967	0.00607	1	1567	GS15
1568	GS16	5OC1967	0.00433	1	1569	GS17	5OC1967	0.02230	1	1570	GS18
1571	GS19	6CC1967	0.00059	1	1572	GS20	6OC1967	0.00090	1	1573	GS21
1574	GS22	6OC1967	0.00863	1	1575	GS28	6OC1967	0.00516	1	1526	PD 1
1550	MR 1	5OC1967	0.01239	1	1553	SG 1	6CC1967	0.02938	1	1417	FO 2
1350	BH 2	19AP1967	0.00661	1	1400	SB 2	6MY1967	0.01191	1	1352	KW 2
1403	CA 2	10MY1967	0.01308	1	1404	MC 2	10MY1967	0.02541	1	1405	ES 2
1407	SM 2	14MY1967	0.03583	1	1349	CI 2	19AP1967	0.00359	1	1406	GB 2
1422	GA 2	23MY1967	0.00511	1							

Genus *Amphora* Ehr.  
Ehrenberg, Ber. Akad. Wiss. Berlin, 1840:205. 1841.

Most members of the genus *Amphora* find their primary habitat in periphyton communities where they grow attached to filamentous algae or to aquatic vascular plants. Some species grow attached to the larger forms of euplanktonic algae and are occasionally found in abundance in plankton collections. Although attached growth is usual in the genus it is not obligate and many, particularly the larger, species are found in abundance in epipellic communities. A number of unusual and apparently undescribed forms occur in our collections. This highly diverse flora appears to have its closest counterpart in the Siberian flora, particularly that associated with ancient Lake Baikal. It is suspected that this apparent disjunct distribution is more the result of lack of sufficient collection stations from large boreal lakes than from a truly disjunct distribution.

*Amphora calumetica* (Thomas) Per.

*Amphiprora calumetica* Thomas, Notarisia, 2:328. 1887.

*Amphora calumetica* (Thomas) Peragallo, Cat. Gen. Diat. 1897. (fide Mills, 1933; original reference not available).

58 AMCALUME TCT NC CF STATIONS 36

(46921	CH	23NO1945	0.00129 )	(46517	CH	12JA1946	0.00028 )	(46920	CH	20DE1946	0.00031 )
(46905	CH	JA1947	0.00123 )	(46516	CH	4MY1947	0.00068 )	(46906	CH	MY1947	0.00133 )
(46919	CH	5JN1947	0.00152 )	(46907	CH	JL1947	0.00099 )	(46922	CH	21AU1947	0.00145 )
(46758	EV	5JN1937	0.05345 )	(46771	EV	11JN1937	0.00238 )	(46770	EV	9JL1937	0.00596 )
(46764	EV	17JL1937	0.12892 )	(46757	EV	25JL1937	0.02407 )	(46747	EV	1AU1937	0.02228 )
(46765	EV	30AU1937	0.00558 )	(46752	EV	15SE1937	0.02177 )	(46760	EV	22SE1937	0.01477 )
(46750	EV	24SE1937	0.00471 )	(46748	EV	13OC1937	0.04270 )	(46767	EV	27OC1937	0.00387 )
(46749	EV	12MR1938	0.02427 )	(46768	EV	16MR1938	0.01470 )	(46762	EV	18MR1938	0.11028 )
(46756	EV	27AP1938	0.00504 )	(46759	EV	19MY1938	0.00675 )	(1279	E 1	16SE1964	0.00393 )
(1341	A 3	19AP1967	0.00108 )	(1542	E 3	11OC1967	0.00509 )	(1574	GS22	6OC1967	0.00575 )
(1526	MO 1	20SE1967	0.00569 )	(1527	TR 1	20SE1967	0.01887 )	(1530	FR 1	24SE1967	0.01000 )
(1545	WL 1	20C1967	0.00676 )	(1426	MS 2	29MY1967	0.01050 )	(1423	WA 2	25MY1967	0.00428 )

*Amphora crucifera* A. Cleve

*Amphora crucifera* A. Cleve, Acta Forest. Fennica, 22:53. 1922.

59 AMCRUCIO TCT NC CF STATIONS 4

(1520	HO 1	18SE1967	0.00471 )	(1401	MO 2	6MY1967	0.00588 )	(1402	TR 2	6MY1967	0.00541 )
(1400	SB 2	6MY1967	0.00596 )								

*Amphora montana* Krasske

*Amphora montana* Krasske, Hedwigia, 72(3):119, pl. 2, fig. 27. 1932.

60 AMMONTAN TCT NC CF STATIONS 4

(1522	BH 1	18SE1967	0.00182 )	(1523	RA 1	19SE1967	0.00923 )	(1550	MR 1	5OC1967	0.01239 )
(1350	BH 2	19AP1967	0.01762 )								

*Amphora normani* Rabh.

*Amphora normani* Rabenhorst, Fl. Europaea Alg., p. 88. 1864.

61 AMNORMAN TCT NC CF STATIONS 1

(1350	BH 2	19AP1967	0.00220 )								
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*Amphora ovalis* (Kütz.) Kütz.

*Frustulia ovalis* Kützing, Linnaea, 8:539, pl. 13, fig. 5. 1833.

*Amphora ovalis* (Kütz.) Kützing, Bacill., p. 107, pl. 5, figs. 35, 39. 1844.

62 AMOVALIS TOT NO OF STATIONS 37

(60973	CH	1876	0.04724 )	(3541	CH	1FE1881	0.01956 )	(46921	CH	23NO1945	0.00065 )
(46917	CH	12JA1946	0.00028 )	(46524	CH	10MY1946	0.00141 )	(46920	CH	20DE1946	0.00185 )
(46909	CH	MR1947	0.00455 )	(46916	CH	4MY1947	0.00034 )	(46906	CH	MY1947	0.00066 )
(46919	CH	5JN1947	0.00152 )	(46522	CH	21AU1947	0.00145 )	(46747	EV	1AU1937	0.01238 )
(46752	EV	15SE1937	0.02177 )	(46762	EV	18MR1938	0.02206 )	(46756	EV	27AP1938	0.00168 )
(1240	D 6	10JN1964	0.00307 )	(1270	F 1	10AU1964	0.00272 )	(1279	E 1	16SE1964	0.00393 )
(1284	E 6	17SE1964	0.00318 )	(1297	D 6	14OC1964	0.00190 )	(1305	F 2	11OC1964	0.00173 )
(1346	C 7	21AP1967	0.00134 )	(1388	GS12	12MY1967	0.00603 )	(1389	GS13	12MY1967	0.00258 )
(1392	GS16	12MY1967	0.00925 )	(1393	GS17	13MY1967	0.00274 )	(1565	GS13	5OC1967	0.00507 )
(1567	GS15	5OC1967	0.00635 )	(1568	GS16	5OC1967	0.00144 )	(1573	GS21	6OC1967	0.00112 )
(1574	GS22	6OC1967	0.02013 )	(1546	LU 1	20C1967	0.00500 )	(1520	HO 1	18SE1967	0.00943 )
(1527	TR 1	20SE1967	0.00625 )	(1545	WL 1	2OC1967	0.00681 )	(1350	BH 2	19AP1967	0.00220 )
(1402	TR 2	6MY1967	0.00541 )								

*Amphora ovalis* var. *gracilis* (Ehr.) V. H.

*Amphora gracilis* Ehrenberg, Abh. Akad. Wiss. Berlin, 1841:410, pl. 3 (I), fig. 43. 1843.

*Amphora ovalis* var. *gracilis* (Ehr.) Van Heurck, Syn. Diat. Belgique, p. 59. 1885.

Coll: 1193.

*Amphora ovalis* var. *libyca* (Ehr.) Cleve

*Amphora libyca* Ehrenberg, Ber. Akad. Wiss. Berlin, 1840:205. 1841.

*Amphora ovalis* var. *libyca* (Ehr.) Cleve, K. Svenska Vet.-Akad. Handl., Ser. 2, 27(3):104. 1895.

63 AMOVALVL TOT NC CF STATIONS 107													
10	8	( 3540	CH	11MY1879	0.00466 )	( 3541	CH	1FE1881	0.05869 )	( 3507	CH	19FE1881	C.01132 )
9	7	( 46910	CH	OC1945	0.00546 )	( 46921	CH	23NO1945	0.03363 )	( 46917	CH	12JA1946	0.00998 )
8	6	( 46915	CH	20FE1946	0.01707 )	( 46914	CH	19AP1946	0.01708 )	( 46924	CH	10MY1946	C.00423 )
7	5	( 46923	CH	22NO1946	0.03497 )	( 46920	CH	20DE1946	0.01541 )	( 46905	CH	JA1947	C.00735 )
6	4	( 46909	CH	MR1947	0.04098 )	( 46916	CH	4MY1947	0.00407 )	( 46906	CH	MY1947	C.01062 )
5	3	( 46919	CH	5JN1947	0.01214 )	( 46907	CH	JL1947	0.00296 )	( 46922	CH	21AU1947	C.04943 )
4	2	( 46758	EV	5JN1937	0.12481 )	( 46771	EV	11JN1937	0.01426 )	( 46743	EV	20JN1937	0.02141 )
3	1	( 46764	EV	17JL1937	0.13695 )	( 46757	EV	25JL1937	0.03852 )	( 46747	EV	1AU1937	C.07674 )
2	0	( 46763	EV	23AU1937	0.56818 )	( 46765	EV	30AU1937	C.00558 )	( 46769	EV	7SE1937	0.02171 )
1	0	( 46752	EV	15SE1937	0.34828 )	( 46760	EV	22SE1937	0.00492 )	( 46750	EV	24SE1937	C.03299 )
0	0	( 46744	EV	6OC1937	0.02439 )	( 46748	EV	13OC1937	0.02135 )	( 46767	EV	27OC1937	C.03481 )
0	0	( 46749	EV	12MR1938	0.02427 )	( 46768	EV	16MR1938	0.19109 )	( 46762	EV	18MR1938	C.26467 )
0	0	( 46751	EV	30MR1938	0.02233 )	( 46756	EV	27AP1938	0.00336 )	( 46759	EV	19MY1938	C.00338 )
0	0	( 46761	EV	27MY1938	0.02180 )	( 46766	EV	14DE1938	0.07921 )	( 1240	D 6	10JN1964	C.00460 )
0	0	( 1258	F 1	6JL1964	0.00472 )	( 1259	F 2	6JL1964	0.00620 )	( 1260	F 3	6JL1964	C.00191 )
0	0	( 1270	F 1	10AU1964	0.00545 )	( 1275	D 2	17SE1964	0.01290 )	( 1278	D 6	18SE1964	C.00384 )
0	0	( 1279	E 1	16SE1964	0.02356 )	( 1285	F 1	15SE1964	0.01165 )	( 1286	F 2	15SE1964	C.01095 )
0	0	( 1306	F 3	11OC1964	0.00277 )	( 1337	C 3	2MR1967	0.00147 )	( 1340	C 7	28MR1967	C.00073 )
0	0	( 1341	A 3	19AP1967	C.00108 )	( 1343	A 6	19AP1967	C.00069 )	( 1536	E 2	24SE1967	C.00818 )
0	0	( 1541	E 2	11OC1967	0.00532 )	( 1382	GS 6	10MY1967	0.00278 )	( 1385	GS 9	10MY1967	C.00235 )
0	0	( 1387	GS11	12MY1967	C.03961 )	( 1388	GS12	12MY1967	0.07843 )	( 1389	GS13	12MY1967	C.01547 )
0	0	( 1390	GS14	12MY1967	0.03523 )	( 1391	GS15	12MY1967	0.00479 )	( 1392	GS16	12MY1967	C.01233 )
0	0	( 1394	GS18	13MY1967	0.00860 )	( 1397	GS21	13MY1967	C.00131 )	( 1398	GS22	14MY1967	C.01214 )
0	0	( 1554	GS 1	3OC1967	0.01067 )	( 1557	GS 4	3OC1967	0.00747 )	( 1558	GS 5	4OC1967	C.00396 )
0	0	( 1560	GS 8	4OC1967	0.00472 )	( 1564	GS12	5OC1967	0.00494 )	( 1565	GS13	5OC1967	C.13690 )
0	0	( 1566	GS14	5OC1967	0.00367 )	( 1567	GS15	5OC1967	0.08891 )	( 1569	GS17	5OC1967	C.00446 )
0	0	( 1572	GS20	6OC1967	0.00180 )	( 1573	GS21	6OC1967	0.00112 )	( 1574	GS22	6OC1967	C.18409 )
0	0	( 1544	MU 1	2OC1967	0.00477 )	( 1547	MS 1	2OC1967	0.01597 )	( 1524	MI 1	2OC1967	C.02189 )
0	0	( 1546	LU 1	2OC1967	0.04502 )	( 1520	HQ 1	18SE1967	0.00943 )	( 1526	MC 1	20SE1967	C.02276 )
0	0	( 1527	TR 1	2CSE1967	0.13208 )	( 1528	SB 1	20SE1967	0.02888 )	( 1529	KW 1	20SE1967	C.03598 )
0	0	( 1530	FR 1	24SE1967	0.05001 )	( 1545	WL 1	2OC1967	0.07433 )	( 1549	MQ 1	4OC1967	C.02741 )
0	0	( 1552	SM 1	6OC1967	0.00660 )	( 1553	SG 1	6OC1967	0.02203 )	( 1428	MU 2	25MY1967	C.00301 )
0	0	( 1351	MI 2	21AP1967	0.00310 )	( 1417	HQ 2	22MY1967	0.01122 )	( 1350	BH 2	19AP1967	C.01542 )
0	0	( 1399	PW 2	5MY1967	0.00680 )	( 1401	MC 2	6MY1967	0.02940 )	( 1402	TR 2	6MY1967	C.02166 )
0	0	( 1400	SB 2	6MY1967	0.01191 )	( 1354	GH 2	25AP1967	0.00173 )	( 1404	MC 2	10MY1967	C.02541 )
0	0	( 1349	CI 2	19AP1967	0.00359 )	( 1406	GB 2	13MY1967	0.00270 )	(			

*Amphora ovalis* var. *pediculus* (Kütz.) V. H.

*Cymbella* ? *pediculus* Kützling, Bacill., p. 80, pl. 5, fig. 8; pl. 6, fig. 7. 1844.

*Amphora ovalis* var. *pediculus* (Kütz.) Van Heurck, Syn. Diat. Belgique, p. 59. 1885.

## 64 AMOVALVP ICT NO CF STATICS 139

( 60973 )	CH	1876	0.18895 )	( 3541 )	CH	1FE1881	0.01556 )	( 46910 )	CH	0C1945	C.00328 )
( 46921 )	CH	23NO1945	0.00129 )	( 46517 )	CH	12JA1946	0.00083 )	( 46915 )	CH	20FE1946	0.02276 )
( 46914 )	CH	19AP1946	0.00107 )	( 46524 )	CH	10MY1946	0.00282 )	( 46923 )	CH	22NO1946	C.01093 )
( 46905 )	CH	JA1947	0.00490 )	( 46909 )	CH	MR1947	0.02277 )	( 46916 )	CH	4MY1947	0.00068 )
( 46906 )	CH	MY1947	0.00332 )	( 46519 )	CH	5JN1947	0.00759 )	( 46907 )	CH	JL1947	C.00049 )
( 46922 )	CH	21AU1947	0.00194 )	( 46758 )	EV	5JN1937	C.00602 )	( 46770 )	EV	9JL1937	C.00596 )
( 46764 )	EV	17JL1937	0.14504 )	( 46757 )	EV	25JL1937	C.03370 )	( 46747 )	EV	1AU1937	C.03713 )
( 46763 )	EV	23AU1937	0.54789 )	( 46765 )	EV	7SE1937	0.02171 )	( 46752 )	EV	15SE1937	C.34828 )
( 46760 )	EV	22SE1937	0.00492 )	( 46750 )	EV	24SE1937	C.02357 )	( 46744 )	EV	60C1937	C.00975 )
( 46748 )	EV	13CC1937	0.44833 )	( 46767 )	EV	27CC1937	0.01547 )	( 46749 )	EV	12MR1938	C.04855 )
( 46768 )	EV	16MR1938	0.23519 )	( 46762 )	EV	18MR1938	C.39700 )	( 46751 )	EV	30MR1938	C.02233 )
( 46759 )	EV	19MY1938	0.00675 )	( 1241 )	E 2	13JN1964	0.00148 )	( 1243 )	E 6	13JN1964	C.00418 )
( 1244 )	F 1	11JN1964	0.00325 )	( 1245 )	F 2	11JN1964	0.00346 )	( 1258 )	F 1	6JL1964	C.01416 )
( 1260 )	F 3	6JL1964	0.00191 )	( 1265 )	C* 2	10AU1964	0.00224 )	( 1268 )	E 2	15AU1964	C.02188 )
( 1270 )	F 1	10AU1964	0.01634 )	( 1272 )	C* 1	10SE1964	0.00410 )	( 1274 )	D 1	17SE1964	C.00938 )
( 1275 )	D 2	17SE1964	0.00645 )	( 1279 )	E 1	16SE1964	0.02749 )	( 1282 )	E 4	16SE1964	C.01108 )
( 1284 )	E 6	17SE1964	0.00635 )	( 1285 )	F 1	15SE1964	0.32031 )	( 1297 )	D 6	14OC1964	C.00190 )
( 1300 )	E 3	13OC1964	0.00358 )	( 1303 )	E 6	13OC1964	0.00560 )	( 1304 )	F 1	11OC1964	C.03457 )
( 1305 )	F 2	11OC1964	0.03105 )	( 1306 )	F 3	11OC1964	0.01109 )	( 1317 )	E 1	6NO1964	C.00191 )
( 1323 )	F 1	6NO1964	0.00139 )	( 1346 )	C 7	21AP1967	0.00134 )	( 1450 )	C 5	16JL1967	0.00190 )
( 1452 )	E 2	14JL1967	0.00426 )	( 1511 )	E 2	1SE1967	0.00307 )	( 1512 )	E 3	1SE1967	C.00393 )
( 1537 )	E 3	24SE1967	0.00431 )	( 1538 )	E 5	23SE1967	C.02762 )	( 1541 )	E 2	11OC1967	C.00532 )
( 1542 )	E 3	11OC1967	C.00509 )	( 1543 )	E 5	10CC1967	0.00718 )	( 1380 )	GS 4	9MY1967	C.00168 )
( 1383 )	GS 7	10MY1967	0.00267 )	( 1384 )	GS 8	10MY1967	0.00185 )	( 1386 )	GS10	12MY1967	C.00575 )
( 1388 )	GS12	12MY1967	0.04827 )	( 1389 )	GS13	12MY1967	0.01289 )	( 1390 )	GS14	12MY1967	C.01174 )
( 1392 )	GS16	12MY1967	0.00616 )	( 1393 )	GS17	13MY1967	0.00548 )	( 1394 )	GS18	13MY1967	C.00516 )
( 1395 )	GS19	13MY1967	0.00235 )	( 1396 )	GS20	13MY1967	0.00592 )	( 1397 )	GS21	13MY1967	C.00196 )
( 1398 )	GS22	14MY1967	0.02429 )	( 1554 )	GS 1	30C1967	0.00712 )	( 1555 )	GS 2	30C1967	C.01412 )
( 1556 )	GS 3	30C1967	C.01043 )	( 1557 )	GS 4	30C1967	0.00747 )	( 1558 )	GS 5	40C1967	C.01586 )
( 1559 )	GS 7	40C1967	0.00350 )	( 1560 )	GS 8	40C1967	0.00945 )	( 1562 )	GS10	50C1967	C.00247 )
( 1565 )	GS13	50C1967	5.32400 )	( 1566 )	GS14	50C1967	0.00367 )	( 1567 )	GS15	50C1967	C.01061 )
( 1568 )	GS16	50C1967	0.00144 )	( 1571 )	GS19	60C1967	0.00293 )	( 1572 )	GS20	60C1967	C.01262 )
( 1573 )	GS21	60C1967	0.01904 )	( 1574 )	GS22	60C1967	0.67307 )	( 1575 )	GS28	60C1967	C.00774 )
( 1544 )	MU 1	20C1967	0.03336 )	( 1547 )	MS 1	20C1967	0.03194 )	( 1546 )	LU 1	20C1967	C.50518 )
( 1520 )	HO 1	18SE1967	0.01414 )	( 1521 )	SH 1	18SE1967	0.03462 )	( 1522 )	BH 1	18SE1967	C.00365 )
( 1523 )	RA 1	19SE1967	0.01845 )	( 1526 )	MO 1	20SE1967	0.32429 )	( 1527 )	TR 1	20SE1967	1.00629 )
( 1528 )	SB 1	20SE1967	0.07219 )	( 1529 )	KW 1	20SE1967	1.00731 )	( 1530 )	FR 1	24SE1967	C.21002 )
( 1545 )	WL 1	20C1967	1.83796 )	( 1548 )	CA 1	30C1967	0.01272 )	( 1549 )	WQ 1	40C1967	0.06852 )
( 1551 )	ES 1	50C1967	0.03195 )	( 1552 )	SM 1	60C1967	0.05282 )	( 1550 )	MR 1	50C1967	1.98241 )
( 1553 )	SG 1	60C1967	0.10282 )	( 1428 )	MU 2	29MY1967	0.00301 )	( 1426 )	MS 2	29MY1967	C.88189 )
( 1351 )	MI 2	21AP1967	0.00621 )	( 1427 )	LU 2	29MY1967	C.01211 )	( 1417 )	HO 2	22MY1967	C.01869 )
( 1350 )	BH 2	19AP1967	C.38766 )	( 1399 )	SW 2	5MY1967	0.00680 )	( 1401 )	WQ 2	6MY1967	C.05292 )
( 1402 )	TR 2	6MY1967	0.03249 )	( 1400 )	SB 2	6MY1967	0.00596 )	( 1352 )	KW 2	21AP1967	C.00859 )
( 1353 )	FR 2	23AP1967	0.02110 )	( 1354 )	GH 2	25AP1967	0.01381 )	( 1429 )	WL 2	29MY1967	C.01062 )
( 1403 )	CA 2	10MY1967	0.02615 )	( 1404 )	MC 2	10MY1967	0.26677 )	( 1405 )	ES 2	12MY1967	C.00645 )
( 1407 )	SM 2	14MY1967	0.22691 )	( 1349 )	CI 2	19AP1967	0.01437 )	( 1422 )	GA 2	23MY1967	C.00511 )
( 1423 )	WA 2	25MY1967	0.00428 )	( )							

*Amphora rotunda* Skv.

*Amphora rotunda* Skvortzow, Phillipine J. Sci., 62(3):342, pl. 12, fig. 18. 1937.

## 65 AMRQIUNQ ICT NO CF STATICS 1

( 1520 ) HO 1 18SE1967 0.00471 ) ( )

*Amphora siberica* Skv. and Meyer

*Amphora siberica* Skvortzow and Meyer, Proc. Sungaree River Biol. Sta., 1(5):36, pl. 3, fig. 168. 1928.

## 66 AMSIBIRI ICT NO CF STATICS 13

( 46758 )	EV	5JN1937	0.01426 )	( 46743 )	EV	20JN1937	0.00856 )	( 46747 )	EV	1AU1937	C.00495 )
( 46752 )	EV	15SE1937	0.04354 )	( 46744 )	EV	60C1937	0.00488 )	( 46762 )	EV	18MR1938	C.02206 )
( 1258 )	F 1	6JL1964	0.00236 )	( 1546 )	LU 1	20C1967	0.01501 )	( 1545 )	WL 1	20C1967	0.02703 )
( 1427 )	LU 2	29MY1967	0.01211 )	( 1402 )	TR 2	6MY1967	0.01083 )	( 1400 )	SB 2	6MY1967	C.00596 )
( 1354 )	GH 2	25AP1967	0.00173 )	( )							

*Amphora veneta* Kütz.

*Amphora veneta* Kützting, Bacill., p. 108, pl. 3, fig. 24. 1844.

## 67 AMVENETA ICT NO CF STATIONS 4

( 46916 )	CH	4MY1947	0.00136 )	( 1240 )	D 6	10JN1964	0.00153 )	( 1350 )	BH 2	19AP1967	C.00441 )
( 1406 )	GB 2	13MY1967	0.00270 )	( )							

Species *incertae sedis*

*Amphora "veneta var. angularis" (not published)*

68 AMVENEVA TOT NO OF STATIONS 6											
( 46770	EV	9JL1937	0.00596 )	( 1254	D 2	15JL1964	0.00192 )	( 1268	E 2	15AU1964	0.00274 )
( 1557	GS 4	30C1967	0.00374 )	( 1565	GS13	50C1967	0.00507 )	( 1574	GS22	60C1967	0.00288 )

*Amphora* sp. #1.

69 AMSPECOA TOT NO OF STATIONS 4											
( 1258	F 1	6JL1964	0.00236 )	( 1285	F 1	15SE1964	0.00582 )	( 1393	GS17	13MY1967	0.00274 )
( 1574	GS22	60C1967	0.00288 )	(							

*Amphora* sp. #3.

70 AMSPECCO TOT NO OF STATIONS 10											
( 1258	F 1	6JL1964	0.00236 )	( 1279	E 1	16SE1964	0.00393 )	( 1543	E 5	10CC1967	0.00718 )
( 1393	GS17	13MY1967	0.00274 )	( 1554	GS 1	30C1967	0.00356 )	( 1565	GS13	50C1967	0.00578 )
( 1546	LU 1	20C1967	0.00500 )	( 1526	MC 1	20SE1967	0.00569 )	( 1545	WL 1	20C1967	0.07433 )
( 1550	MR 1	50C1967	0.01239 )	(							

*Amphora* sp. #4.

71 AMSPECCD TOT NO OF STATIONS 12											
( 46917	CH	12JA1946	0.00028 )	( 46514	CH	19AP1946	0.00107 )	( 46919	CH	5JN1947	0.00152 )
( 46747	EV	1AU1937	0.00248 )	( 46752	EV	15SE1937	0.02177 )	( 46748	EV	13OC1937	0.04270 )
( 46767	EV	27OC1937	0.00774 )	( 1285	F 1	15SE1964	0.02330 )	( 1411	C 3	31MY1967	0.00410 )
( 1388	GS12	12MY1967	0.00603 )	( 1566	GS14	50C1967	0.00183 )	( 1573	GS21	60C1967	0.00112 )

*Amphora* sp. #6.

72 AMSPECCF TOT NO OF STATIONS 8											
( 1346	C 7	21AP1967	0.00134 )	( 1521	SH 1	18SE1967	0.00577 )	( 1527	TR 1	20SE1967	0.04402 )
( 1545	WL 1	20C1967	0.08109 )	( 1417	HG 2	22MY1967	0.00374 )	( 1350	BH 2	19AP1967	0.00220 )
( 1400	SB 2	6MY1967	0.01787 )	( 1421	CH 2	23MY1967	0.01735 )	(			

*Amphora* sp. #7.

73 AMSPECCG TOT NO OF STATIONS 1											
( 1285	F 1	15SE1964	0.02330 )	(							

*Amphora* sp. #8.

74 AMSPECOH TOT NO OF STATIONS 3											
( 1389	GS13	12MY1967	0.00258 )	( 1565	GS13	50C1967	0.00507 )	( 1350	BH 2	19AP1967	0.00220 )

*Amphora* sp. #9.

75 AMSPECCI TCT NO OF STATIONS				1
( 1565	GS13	50C1967	0.00507 )	(

*Amphora* sp. #10.

76 AMSPECCJ TCT NO OF STATIONS				2
( 1574	GS22	60C1967	0.00863 )	( 1404 MC 2 10MY1967 0.01270 ) (

*Amphora* sp. #11.

77 AMSPECCK TCT NO OF STATIONS				1
( 1520	HO 1	18SE1967	0.00471 )	(

# Genus *Anomoeoneis* Pfitz.

Pfitzner, Bot. Abh. Geb. Morph. Physiol., 1(2):77. 1871.

Members of the genus *Anomoeoneis* find their primary habitat in periphyton and epipelagic communities. The few specimens that we have taken in plankton collections from Lake Michigan are most likely accidental occurrences being derived from other habitats.

*Anomoeoneis seriens* var. *brachysira* (Bréb. ex Kütz.) Hust.

*Navicula aponina* var. *brachysira* de Brébisson ex Kützinger, Sp. Alg., p. 69. 1849.

*Anomoeoneis seriens* var. *brachysira* (Bréb. ex Kütz.) Hustedt in: Pascher, Süßsw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 264, fig. 427. 1930.

80 ANSERVBQ TCT NO OF STATIONS				1
1285	F 1	15SE1964	0.00582 )	(

*Anomoeoneis vitrea* (Grun.) Ross

*Gomphonema vitreum* Grunow in: Schneider, Naturw. Beitr. Kenntn. Kaukasusländer, p. 110. 1878.

*Anomoeoneis vitrea* (Grun.) Ross ex Reimer in: Patrick and Reimer, Acad. Nat. Sci. Philadelphia Monogr., 13:380, pl. 33, figs. 12-13. 1966.

81 ANVITREA TOT NO OF STATIONS				33
( 46924	CH	10MY1946	0.00071 )	( 46505 CH JA1947 0.00123 ) ( 46916 CH 4MY1947 0.00170 )
( 46919	CH	5JN1947	0.24582 )	( 46513 CH 6AU1947 0.03138 ) ( 46922 CH 21AU1947 0.00048 )
( 46764	EV	17JL1937	0.02223 )	( 46757 EV 25JL1937 0.02889 ) ( 46747 EV 1AU1937 0.00495 )
( 46763	EV	23AU1937	0.06088 )	( 46752 EV 15SE1937 0.04354 ) ( 46750 EV 24SE1937 0.00471 )
( 46768	EV	16MR1938	0.01470 )	( 46762 EV 18MR1938 0.02206 ) ( 46751 EV 30MR1938 0.01117 )
( 1245	F 2	11JN1964	0.00346 )	( 1258 F 1 6JL1964 0.00944 ) ( 1260 F 3 6JL1964 0.00191 )
( 1268	E 2	15AU1964	0.00274 )	( 1270 F 1 10AU1964 0.01906 ) ( 1285 F 1 15SE1964 0.00241 )
( 1452	E 2	14JL1967	0.00426 )	( 1380 GS 4 9MY1967 0.00168 ) ( 1394 GS18 13MY1967 0.00172 )
( 1554	GS 1	30C1967	0.00356 )	( 1565 GS13 50C1967 0.00507 ) ( 1546 LU 1 20C1967 0.00500 )
( 1545	WL 1	20C1967	0.00676 )	( 1549 MQ 1 40C1967 0.01370 ) ( 1551 ES 1 50C1967 0.00799 )
( 1550	MR 1	50C1967	0.02478 )	( 1403 CA 2 10MY1967 0.06539 ) ( 1404 MQ 2 10MY1967 0.02541 )

Species *incertae sedis*

*Anomoeoneis vitrea* var. 1.

82 ANVIRVA TCI AC CF STATIONS 5									
(46913	CH	6AU1947	0.01046 )	( 1285	F 1	155E1964	0.02912 )	( 1575	GS28
( 1403	CA 2	10MY1967	0.01308 )	( 1404	MC 2	10MY1967	0.01270 )	(	60C1967 C.0C129 )

Genus *Asterionella* Hass.

Hassall, Micr. Exam. Water, p. 10, pl. 2(2), fig. 5. 1850.

*Asterionella bleakeleyi* Wm. Smith

*Asterionella bleakeleyi* Wm. Smith, Syn. British Diat., vol. 2, p. 82. 1856.

Cells asymmetric to the transverse axis, in life attached by the broader end to 4-16 other cells, forming a stellate colony. Valves of specimens from Lake Michigan 35-67 $\mu$  long, 4-5 $\mu$  broad at widest extremity. In this taxon the valves taper slightly from the much expanded, often asymmetric, "headpole" to the less expanded "footpole." The width of the midpoint of the valve is always greater than one-half the width of the widest extremity. The margins of the valve are usually slightly convex near middle and are suddenly and sharply constricted just before the capitate "footpole." Striae fine and inconspicuous, without visible substructure, 26-30 in 10 $\mu$ . Axial area narrow, central area lacking.

This entity is common in some polluted harbors bordering Lake Michigan. We have not, as yet, found it in appreciable quantities in the plankton of the open lake. It is difficult to distinguish from *A. formosa* in the living condition, although its broader, blunter valves which are somewhat expanded in the middle allow it to be recognized if populations of the two entities are compared. Cleaned preparations are required for certain identification.

86 ASBLEAKL TCI AC OF STATIONS 1									
( 1522	BH 1	185E1967	11.29629 )	(					

*Asterionella formosa* Hass.

*Asterionella formosa* Hassall, Micr. Exam. Water, p. 10, pl. 2(2), fig. 21. 1850.

Cells asymmetric to the transverse axis, in life attached by the broader end to 4-16 other cells, forming a stellate colony. Valves of specimens from Lake Michigan 42-120 $\mu$  long, 4-5 $\mu$  broad at the widest extremity. In this taxon the ends of the valve are suddenly and sharply expanded and the body of the valve is very narrow (1.5-2 $\mu$ ) with parallel sides in the large individuals and a slight taper towards the smaller end in smaller individuals. The width of the midpoint of the valve is always less than one-half that of the widest extremity. Striae fine and inconspicuous, without visible substructure, 24-28 in 10 $\mu$ . The axial area is very narrow and filiform, central area entirely lacking. In specimens from Lake Michigan very small spines often occur on the margins of the valves.

This species is abundant in collections from all areas of Lake Michigan. Populations from the open are usually composed mostly of individuals with less robust structure and apparently lighter silicification than nearshore populations. Although it is tempting to separate these, our observations indicate that they represent a growth form and cannot be distinguished on the basis of morphology. In areas of the lake that have been eutrophied, both the relative abundance and the seasonal dominance of this species are increased.

84 ASFORMCS TCT NO OF STATICS 316

( 60973 )	CH	1876	1.86585 )	( 46510 )	CH	OC1945	2.87499 )	( 46921 )	CH	23NO1945	6.01116 )
( 46908 )	CH	DE1945	7.53273 )	( 46517 )	CH	12JA1946	4.63131 )	( 46915 )	CH	20FE1946	5.54828 )
( 46914 )	CH	19AP1946	2.49858 )	( 46524 )	CH	10MY1946	0.68782 )	( 46923 )	CH	22NO1946	3.33741 )
( 46920 )	CH	20CE1946	1.98263 )	( 46505 )	CH	JA1947	0.59811 )	( 46909 )	CH	MR1947	2.36783 )
( 46912 )	CH	AP1947	9.71599 )	( 46916 )	CH	4MY1947	26.39847 )	( 46906 )	CH	MY1947	18.72278 )
( 46919 )	CH	5JN1947	20.36691 )	( 46507 )	CH	JL1947	18.10959 )	( 46913 )	CH	6AU1947	C.42883 )
( 46922 )	CH	21AU1947	1.57509 )	( 46758 )	EV	5JN1937	6.78981 )	( 46771 )	EV	11JN1937	12.78113 )
( 46743 )	EV	20JN1937	21.10130 )	( 46745 )	EV	3JL1937	2.92581 )	( 46770 )	EV	9JL1937	1.83683 )
( 46764 )	EV	17JL1937	3.60995 )	( 46757 )	EV	25JL1937	1.34803 )	( 46747 )	EV	1AU1937	C.46043 )
( 46763 )	EV	23AU1937	1.78571 )	( 46765 )	EV	30AU1937	0.52426 )	( 46769 )	EV	7SE1937	C.28224 )
( 46752 )	EV	15SE1937	0.92600 )	( 46760 )	EV	22SE1937	1.10296 )	( 46750 )	EV	24SE1937	2.11151 )
( 46744 )	EV	6OC1937	1.50215 )	( 46748 )	EV	13OC1937	3.97096 )	( 46767 )	EV	27OC1937	11.04793 )
( 46745 )	EV	12MR1938	13.25403 )	( 46768 )	EV	16MR1938	11.11274 )	( 46762 )	EV	18MR1938	5.33745 )
( 46751 )	EV	30MR1938	7.81595 )	( 46772 )	EV	18AP1938	10.92974 )	( 46756 )	EV	27AP1938	22.00244 )
( 46759 )	EV	19MY1938	0.81702 )	( 46761 )	EV	27MY1938	2.74719 )	( 46766 )	EV	14DE1938	19.51837 )
( 1223 )	B 3	18MY1964	C.00938 )	( 1224 )	B 4	18MY1964	0.04313 )	( 1225 )	C 6	15MY1964	C.75657 )
( 1226 )	C 7	16MY1964	0.53272 )	( 1227 )	C* 2	13MY1964	0.01645 )	( 1228 )	D 2	14MY1964	C.06617 )
( 1229 )	D 5	14MY1964	0.54133 )	( 1230 )	E 2	16MY1964	0.05334 )	( 1231 )	E 3	16MY1964	C.31553 )
( 1232 )	E 5	16MY1964	0.14087 )	( 1233 )	B 3	5JN2964	0.11907 )	( 1234 )	B 3	18JN1964	C.14901 )
( 1235 )	C 7	16JN1964	0.19770 )	( 1236 )	B 6	5JN1964	2.23776 )	( 1236 )	C* 1	8JN1964	C.13478 )
( 1237 )	C* 2	8JN1964	0.24233 )	( 1238 )	D 3	11JN1964	0.11800 )	( 1239 )	D 4	11JN1964	C.01741 )
( 1240 )	D 6	10JN1964	C.53688 )	( 1241 )	E 2	13JN1964	0.56824 )	( 1242 )	E 3	13JN1964	C.06894 )
( 1243 )	E 6	13JN1964	0.58465 )	( 1244 )	F 1	11JN1964	0.38376 )	( 1245 )	F 2	11JN1964	C.06224 )
( 1246 )	F 3	11JN1964	0.25100 )	( 1247 )	B 3	14JL1964	0.99885 )	( 1248 )	B 3	24JL1964	1.37536 )
( 1440 )	B 6	11JL1964	3.35335 )	( 1441 )	B 6	24JL1964	2.46701 )	( 1249 )	C 3	8JL1964	C.24221 )
( 1250 )	C 6	10JL1964	0.52210 )	( 1251 )	C 7	16JL1964	0.74164 )	( 1252 )	C* 1	16JL1964	C.90934 )
( 1253 )	C* 2	16JL1964	0.53405 )	( 1254 )	D 2	15JL1964	1.27370 )	( 1255 )	D 5	15JL1964	3.55324 )
( 1256 )	E 2	14JL1964	0.83352 )	( 1257 )	E 3	14JL1964	C.72736 )	( 1258 )	F 1	6JL1964	4.79032 )
( 1259 )	F 2	6JL1964	4.12122 )	( 1260 )	F 3	6JL1964	4.94681 )	( 1261 )	B 3	2AU1964	2.60600 )
( 1262 )	B 3	17AU1964	8.37883 )	( 1442 )	B 6	2AU1964	2.62709 )	( 1443 )	B 6	16AU1964	C.65185 )
( 1263 )	C 7	15AU1964	0.56045 )	( 1264 )	C* 1	10AU1964	1.89218 )	( 1265 )	C* 2	10AU1964	6.88530 )
( 1266 )	D 3	18AU1964	7.36635 )	( 1267 )	D 6	18AU1964	6.05274 )	( 1268 )	E 2	15AU1964	6.51056 )
( 1269 )	E 3	15AU1964	4.98821 )	( 1270 )	F 1	10AU1964	15.05786 )	( 1444 )	B 6	19SE1964	4.24384 )
( 1271 )	C 7	22SE1964	0.91402 )	( 1272 )	C* 1	10SE1964	9.76891 )	( 1273 )	C* 2	10SE1964	14.30184 )
( 1274 )	D 1	17SE1964	3.61282 )	( 1275 )	D 2	17SE1964	13.09593 )	( 1276 )	D 3	18SE1964	2.61511 )
( 1277 )	D 4	18SE1964	2.16875 )	( 1278 )	D 6	18SE1964	1.34517 )	( 1279 )	E 1	16SE1964	7.69623 )
( 1280 )	E 2	16SE1964	2.38274 )	( 1281 )	E 3	16SE1964	2.74693 )	( 1282 )	E 4	16SE1964	3.87812 )
( 1283 )	E 5	16SE1964	2.78901 )	( 1284 )	E 6	17SE1964	11.34306 )	( 1285 )	F 1	15SE1964	6.52262 )
( 1286 )	F 2	15SE1964	3.83100 )	( 1287 )	F 3	15SE1964	8.05645 )	( 1288 )	B 3	15OC1964	11.73320 )
( 1445 )	B 6	14OC1964	10.27397 )	( 1289 )	C 7	14CC1964	5.84847 )	( 1290 )	C* 1	16CC1964	11.53860 )
( 1291 )	C* 2	16OC1964	5.13673 )	( 1292 )	D 1	15CC1964	8.34824 )	( 1293 )	D 2	15OC1964	10.89520 )
( 1294 )	D 3	15CC1964	7.84521 )	( 1295 )	D 4	15OC1964	8.74063 )	( 1296 )	D 5	14OC1964	5.78353 )
( 1297 )	D 6	14OC1964	5.57665 )	( 1298 )	E 1	12CC1964	13.57174 )	( 1299 )	E 2	12OC1964	9.01665 )
( 1300 )	E 3	13OC1964	9.77269 )	( 1301 )	E 4	13CC1964	6.49121 )	( 1302 )	E 5	13OC1964	11.33695 )
( 1303 )	E 6	13OC1964	9.79514 )	( 1304 )	F 1	11OC1964	4.32184 )	( 1305 )	F 2	11OC1964	4.34738 )
( 1306 )	F 3	11OC1964	3.10438 )	( 1307 )	B 6	NO1964	10.60759 )	( 1308 )	C 7	6NO1964	6.81286 )
( 1309 )	C* 1	10NO1964	17.44597 )	( 1310 )	C* 2	10NO1964	18.09523 )	( 1311 )	D 1	8NO1964	16.79478 )
( 1312 )	D 2	8NO1964	17.38319 )	( 1313 )	D 3	9NO1964	10.54054 )	( 1314 )	D 4	9NO1964	8.64215 )
( 1315 )	D 5	9NO1964	6.05095 )	( 1316 )	D 6	9NO1964	8.46177 )	( 1317 )	E 1	6NO1964	14.60902 )
( 1318 )	E 2	7NO1964	12.25196 )	( 1319 )	E 3	7NO1964	13.74597 )	( 1320 )	E 4	7NO1964	16.50646 )
( 1321 )	E 5	7NO1964	16.98270 )	( 1322 )	E 6	7NO1964	13.53018 )	( 1323 )	F 1	6NO1964	11.12195 )
( 1324 )	F 2	6NO1964	8.31528 )	( 1325 )	F 3	6NO1964	2.46858 )	( 1336 )	C 3	27JA1967	1.48268 )
( 1337 )	C 3	2MR1967	7.51040 )	( 1338 )	C 3	28MR1967	5.73862 )	( 1339 )	C 5	28MR1967	C.37102 )
( 1340 )	C 7	28MR1967	11.30026 )	( 1341 )	A 3	19AP1967	1.74653 )	( 1342 )	A 4	19AP1967	2.27383 )
( 1343 )	A 6	19AP1967	2.67474 )	( 1344 )	C 3	25AP1967	2.20035 )	( 1345 )	C 5	25AP1967	2.18311 )
( 1346 )	C 7	21AP1967	2.33667 )	( 1347 )	E 2	23AP1967	2.39005 )	( 1348 )	E 5	23AP1967	1.43934 )
( 1368 )	A 3	4MY1967	0.04713 )	( 1369 )	A 4	4MY1967	0.02982 )	( 1370 )	A 6	3MY1967	C.16112 )
( 1371 )	C 3	4MY1967	0.00693 )	( 1372 )	C 5	5MY1967	C.00709 )	( 1373 )	C 7	5MY1967	C.01426 )
( 1374 )	E 2	7MY1967	1.25523 )	( 1375 )	E 3	7MY1967	0.03609 )	( 1376 )	E 5	6MY1967	C.12930 )
( 1408 )	A 3	23MY1967	0.37115 )	( 1409 )	A 4	23MY1967	1.14563 )	( 1410 )	A 6	24MY1967	C.11840 )
( 1411 )	C 3	31MY1967	0.41850 )	( 1412 )	C 5	31MY1967	1.62051 )	( 1413 )	C 7	25MY1967	C.04422 )
( 1414 )	E 2	28MY1967	0.76574 )	( 1415 )	E 3	28MY1967	0.31479 )	( 1416 )	E 5	28MY1967	C.38269 )
( 1431 )	A 3	12JN1967	1.98265 )	( 1432 )	A 4	13JN1967	C.98345 )	( 1433 )	C 3	17JN1967	4.52138 )
( 1434 )	C 5	17JN1967	0.57722 )	( 1435 )	C 7	13JN1967	0.19891 )	( 1436 )	E 2	15JN1967	C.43060 )
( 1437 )	E 3	15JN1967	0.62983 )	( 1438 )	E 5	14JN1967	0.40668 )	( 1446 )	A 3	11JL1967	6.84898 )
( 1447 )	A 4	11JL1967	18.33832 )	( 1448 )	A 6	10JL1967	0.59416 )	( 1449 )	C 3	16JL1967	5.61733 )
( 1450 )	C 5	16JL1967	8.39760 )	( 1451 )	C 7	16JL1967	5.37380 )	( 1452 )	E 2	14JL1967	12.51756 )
( 1453 )	E 3	15JL1967	4.77719 )	( 1454 )	E 5	15JL1967	21.00420 )	( 1504 )	A 3	28AU1967	1.72818 )
( 1505 )	A 4	28AU1967	24.88921 )	( 1506 )	A 6	29AU1967	5.49249 )	( 1508 )	C 3	25SE1967	19.56276 )
( 1509 )	C 5	2SE1967	19.43065 )	( 1510 )	C 7	29AU1967	13.27853 )	( 1511 )	E 2	15SE1967	32.01645 )
( 1512 )	E 3	1SE1967	10.44448 )	( 1513 )	E 5	31AU1967	4.25661 )	( 1532 )	A 3	18SE1967	4.82501 )
( 1533 )	A 4	19SE1967	12.02302 )	( 1534 )	A 6	19SE1967	7.16657 )	( 1535 )	C 7	20SE1967	3.37979 )
( 1536 )	E 2	24SE1967	19.08708 )	( 1537 )	E 3	24SE1967	6.03813 )	( 1538 )	E 5	23SE1967	3.28675 )
( 1539 )	C 3	4CC1967	16.55429 )	( 1540 )	C 5	4CC1967	5.55914 )	( 1541 )	E 2	11OC1967	10.43052 )
( 1542 )	E 3	11OC1967	13.17128 )	( 1543 )	E 5	10CC1967	7.03922 )	( 1377 )	CS 1	9MY1967	C.00396 )
( 1378 )	GS 2	9MY1967	0.03364 )	( 1379 )	GS 3	9MY1967	0.01547 )	( 1380 )	GS 4	9MY1967	C.15806 )
( 1381 )	GS 5	10MY1967	0.19797 )	( 1382 )	GS 6	10MY1967	0.00278 )	( 1383 )	GS 7	10MY1967	C.08287 )
( 1384 )	GS 8	10MY1967	0.02588 )	( 1385 )	GS 9	10MY1967	0.04709 )	( 1386 )	GS10	12MY1967	C.16087 )
( 1387 )	GS11	12MY1967	C.11090 )	( 1390 )	GS14	12MY1967	0.01762 )	( 1391 )	GS15	12MY1967	C.06225 )
( 1392 )	GS16	12MY1967	0.04315 )	( 1393 )	GS17	13MY1967	C.25751 )	( 1394 )	GS18	13MY1967	C.84288 )
( 1395 )	GS19	13MY1967	0.45212 )	( 1396 )	GS20	13MY1967	0.05771 )	( 1397 )	GS21	13MY1967	C.91567 )
( 1398 )	GS22	14MY1967	0.13662 )	( 1554 )	GS 1	30C1967	8.46794 )	( 1555 )	GS 2	30C1967	8.15678 )
( 1556 )	GS 3	30C1967	7.66543 )	( 1557 )	GS 4	30C1967	6.53961 )	( 1558 )	GS 5	40C1967	6.60155 )
( 1559 )	GS 7	40C1967	6.12016 )	( 1560 )	GS 8	40C1967	6.28158 )	( 1561 )	GS 9	40C1967	4.51957 )
( 1562 )	GS10	50C1967	12.60670 )	( 1563 )	GS11	50C1967	6.71094 )	( 1564 )	GS12	50C1967	4.95424 )



( 1565	GS13	50C1967	10.64801 )	( 1566	GS14	50C1967	3.21042 )	( 1567	GS15	50C1967	1.22253 )
( 1568	GS16	50C1967	15.55533 )	( 1569	GS17	50C1967	3.53782 )	( 1570	GS18	50C1967	3.81793 )
( 1571	GS19	60C1967	2.41765 )	( 1572	GS20	60C1967	2.39743 )	( 1573	GS21	60C1967	6.70169 )
( 1574	GS22	60C1967	10.47000 )	( 1575	GS28	60C1967	3.97378 )	( 1544	MU 1	20C1967	1.86813 )
( 1547	MS 1	20C1967	1.07784 )	( 1524	MJ 1	20SE1967	0.10946 )	( 1546	LU 1	20C1967	C.31511 )
( 1520	FO 1	18SE1967	0.43849 )	( 1521	SH 1	18SE1967	1.93861 )	( 1523	RA 1	19SE1967	5.31365 )
( 1525	PW 1	20SE1967	3.11934 )	( 1526	MC 1	20SE1967	4.64243 )	( 1527	TR 1	20SE1967	1.10692 )
( 1528	SB 1	20SE1967	4.85128 )	( 1529	KW 1	20SE1967	6.52356 )	( 1530	FR 1	24SE1967	3.20032 )
( 1531	GH 1	25SE1967	0.02536 )	( 1545	WL 1	20C1967	0.56761 )	( 1548	CA 1	30C1967	1.28482 )
( 1549	MQ 1	40C1967	14.25243 )	( 1551	ES 1	50C1967	24.15527 )	( 1552	SM 1	60C1967	32.32750 )
( 1550	MR 1	50C1967	9.91203 )	( 1553	SG 1	60C1967	35.37015 )	( 1428	MU 2	29MY1967	1.06059 )
( 1426	MS 2	25MY1967	4.19947 )	( 1351	MI 2	21AP1967	13.15749 )	( 1427	LU 2	29MY1967	C.69007 )
( 1417	FO 2	22MY1967	2.39270 )	( 1418	SH 2	22MY1967	0.01555 )	( 1350	BH 2	19AP1967	C.59511 )
( 1425	RA 2	25MY1967	0.02652 )	( 1299	PW 2	5MY1967	1.41458 )	( 1401	MO 2	6MY1967	C.45389 )
( 1402	TR 2	6MY1967	0.45484 )	( 1400	SB 2	6MY1967	2.09674 )	( 1352	KW 2	21AP1967	15.52998 )
( 1353	FR 2	23AP1967	2.36287 )	( 1354	GH 2	25AP1967	2.95504 )	( 1429	WL 2	25MY1967	1.69869 )
( 1403	CA 2	10MY1967	0.28769 )	( 1404	MQ 2	10MY1967	0.19055 )	( 1405	ES 2	12MY1967	1.34159 )
( 1407	SM 2	14MY1967	2.77065 )	( 1349	CI 2	19AP1967	4.65551 )	( 1406	GB 2	13MY1967	C.43132 )
( 1419	BU 2	23MY1967	0.40278 )	( 1420	IH 2	23MY1967	0.13595 )	( 1421	CH 2	23MY1967	C.10409 )
( 1422	GA 2	23MY1967	0.04087 )	( 1423	WA 2	25MY1967	C.14987 )	( 1424	KN 2	25MY1967	C.29310 )
( 1430	MC 2	12JN1967	0.04935 )	(							

*Asterionella gracillima* (Hantz.) Heib.

*Diatoma gracillimum* Hantzsch in: Rabenhorst, Alg. Sachsen resp. Mittel-europas, No. 1104. 1861.

*Asterionella gracillima* (Hantz.) Heiberg, Consp. Crit. Diat. Danicarum, p. 68, pl. 6, fig. 19. 1863.

Cells nearly symmetric, in life attached at one end to form stellate colonies of 4-16 cells. Valves of specimens from Lake Michigan 35-60 $\mu$  long, 3-4 $\mu$  broad at the widest extremity. In this taxon the valves are sub-linear with capitate ends of nearly equal size. Striae fine and inconspicuous, 24-28 in 10 $\mu$ , without visible substructure. Axial area very narrow and filiform, central area entirely lacking. Specimens from Lake Michigan often have very delicate spines on the margins of the valves.

Numerous authors have commented on the difficulty of establishing the identity and range of morphologic variation in this taxon. Contrary to some previous reports we have found it to be relatively rare in Lake Michigan. It is tempting to treat it as a growth form or variety of *A. formosa*, but our observations lead us to believe that the two taxa are distinct.

85 ASECRMVG ICI NO OF STATIONS 19											
(46917	CH	12JA1946	0.25229 )	(46515	CH	20FE1946	0.01138 )	(46914	CH	19AP1946	C.00427 )
(46924	CH	10MY1946	0.00353 )	(46916	CH	4MY1947	1.43350 )	(46919	CH	5JN1947	C.74050 )
(46743	EV	20JN1927	0.00428 )	(46749	EV	12MR1938	0.03641 )	(46751	EV	30MR1938	C.01117 )
(46756	EV	27AP1938	0.00336 )	( 1225	C 6	15MY1964	0.00392 )	( 1341	A 3	19AP1967	C.11716 )
( 1342	A 4	19AP1967	0.03068 )	( 1343	A 6	19AP1967	0.01251 )	( 1344	C 3	25AP1967	C.00496 )
( 1372	C 5	5MY1967	0.00355 )	( 1453	E 3	15JL1967	0.00758 )	( 1513	E 5	31AU1967	C.01520 )
( 1522	BH 1	18SE1967	0.26258 )	(							

Genus *Bacillaria* Gmel.

Gmelin in: Linnaeus, Syst. Nat., ed. 13, Vol. 1, Part 6, p. 3903. 1788.

The only commonly recognized member of this genus occurs in periphyton communities and occasionally in the plankton of brackish and nearshore marine habitats. It is also found in saline springs and lakes and other waters containing high levels of total dissolved solids in inland regions. The few specimens noted in our collections were undoubtedly derived from such habitats.

*Bacillaria paxillifer* (O. F. Müll.) Hendy

*Vibrio paxillifer* O. F. Müller, Animal. Infus., p. 54. 1786.

*Bacillaria paxillifer* (O. F. Müll.) Hendy, Fish. Invest. (London), Ser. 4, Part 5, p. 274, pl. 21, fig. 5. 1964.

Coll: 1366.

Genus *Caloneis* Cleve

Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):46. 1894.

Members of the genus *Caloneis* find their primary habitats in periphyton or epipelagic communities. The occasional representatives of the genus taken in plankton collections from Lake Michigan are undoubtedly derived from such habitats.

*Caloneis alpestris* (Grun.) Cleve

*Navicula alpestris* Grunow, Verh. Zool.-Bot. Ges. Wien, 10:545, pl. 5, fig. 4. 1860.

*Caloneis alpestris* (Grun.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):53. 1894.

87 CAALPEST TCT NO OF STATIONS 4											
(46917	CH	12JA1946	0.00028 )	( 1504	A 3	28AU1967	0.00247 )	( 1388	GS12	12MY1967	C.00003 )
( 1552	SM 1	60C1967	0.00660 )	(							

*Caloneis amphisbaena* (Bory) Cleve

*Navicula amphisbaena* Bory, Encyclop. Method., p. 565. 1824.

*Caloneis amphisbaena* (Bory) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):58. 1894.

88 CAAMPNIS TCT NO OF STATIONS 3											
( 1520	HO 1	18SE1967	C.00071 )	( 1417	HO 2	22MY1967	0.00374 )	( 1350	BH 2	19AP1967	C.00022 )

*Caloneis bacillaris* var. *thermalis* (Grun.) A. Cleve

*Navicula bacillaris* var. *thermalis* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 12, fig. 27. 1880.

*Caloneis bacillaris* var. *thermalis* (Grun.) A. Cleve, Bih. K. Svenska Vet.-Akad. Handl., 21, Afd. 3(2):16. 1895.

91 CABACIVT TCT NO OF STATIONS 8											
(46915	CH	5JN1947	0.00152 )	(46758	EV	5JN1937	0.00357 )	(46764	EV	17JL1937	C.00023 )
(46747	EV	1AU1937	0.00495 )	(46747	EV	1AU1937	0.00248 )	(46760	EV	22SE1937	C.00042 )
( 1567	GS15	50C1967	0.00159 )	( 1574	GS22	60C1967	0.00288 )	(			

*Caloneis bacillum* (Grun.) Cleve

*Stauroneis bacillum* Grunow, Verh. Zool.-Bot. Ges. Wien, 13:155, pl. 4, figs. 16a-b. 1863.

*Caloneis bacillum* (Grunow) Cleve, Diatomiste, 2(17):99. 1894.

89 CABACILL TCT NO OF STATIONS 17											
(46921	CH	23NO1945	0.00065 )	(46920	CH	20DE1946	0.00031 )	(46916	CH	4MY1947	C.00068 )
(46747	EV	1AU1937	0.00495 )	(46768	EV	16MR1938	0.01470 )	( 1245	F 2	11JN1964	C.00046 )
( 1258	F 1	6JL1964	0.00236 )	( 1284	E 6	17SE1964	0.00318 )	( 1285	F 1	15SE1964	C.01165 )
( 1304	F 1	11OC1964	0.00247 )	( 1389	GS13	12MY1967	C.00258 )	( 1565	GS13	50C1967	C.03042 )
( 1567	GS15	50C1967	0.00159 )	( 1574	GS22	60C1967	0.01438 )	( 1546	LU 1	20C1967	C.00500 )
( 1550	MR 1	50C1967	0.01239 )	( 1350	BH 2	19AP1967	0.00441 )	(			

*Caloneis bacillum* var. *lancettula* (Schulz) Hust.

*Caloneis bacillum* var. *lancettula* (Schulz) Hustedt in: Pascher, Süßw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 236, fig. 361. 1930.

90 CABACIVL TOT NO OF STATIONS 13											
(46764	EV	17JL1937	0.00806 )	(46747	EV	1AU1937	0.00248 )	(46763	EV	23AU1937	0.08117 )
(46768	EV	16MR1938	0.02940 )	(1272	C' 1	10SE1964	0.00410 )	(1285	F 1	15SE1964	0.00582 )
(1306	F 3	11CC1964	0.00277 )	(1387	GS11	12MY1967	0.00396 )	(1388	GS12	12MY1967	0.01207 )
(1546	LU 1	20C1967	0.00500 )	(1526	MO 1	20SE1967	0.00569 )	(1529	KW 1	20SE1967	0.04797 )
(1530	FR 1	24SE1967	0.02000 )	(							

*Caloneis clevei* (Lagerst.) Cleve

*Navicula clevei* Lagerstedt, Bih. K. Svenska Vet.-Akad. Handl., 1:34, pl. 1, fig. 10. 1873.

*Caloneis clevei* (Lagerst.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):51. 1894.

92 CAGLEVEI TOT NO OF STATIONS 1			
(1564	GS12	50C1967	0.00165 ) (

*Caloneis lewisii* Patr.

*Caloneis lewisii* Patrick, Farlowia, 2(2):172. 1945.

93 CALEWISI TOT NO OF STATIONS								2
(60973	CH	1E76	0.02362 )	( 1565	GS13	50C1967	0.00507 ) (	

*Caloneis limosa* (Kütz.) Patr.

*Navicula limosa* Kützing, Bacill., p. 101, pl. 3, fig. 50. 1844.

*Caloneis limosa* (Kütz.) Patrick in: Patrick and Reimer, Acad. Nat. Sci. Philadelphia Monogr., 13:587, pl. 54, fig. 10. 1966.

94 CALIMOSA TOT NO OF STATIONS 1			
(3541	CH	1FE1881	0.00578 ) (

*Caloneis ventricosa* (Ehr.) Meist.

*Navicula ventricosa* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1838:130, pl. 4, fig. 10i. 1839.

*Caloneis ventricosa* (Ehr.) Meister, Beitr. Kryptog.-Fl. Schweiz, 4(1):116, pl. 17, fig. 4. 1912.

Coll: 1157

*Caloneis ventricosa* var. *minuta* (Grun.) Patr.

*Navicula ventricosa* var. *minuta* Grunow in: Van Heurck, Syn. Diat. Belgique, p. 103. 1885.

*Caloneis ventricosa* var. *minuta* (Grun.) Patrick and Reimer, Acad. Nat. Sci. Philadelphia Monogr., 13:584, pl. 54, fig. 2. 1966.

95 CAVENTVM TOT NO OF STATIONS 1			
(1521	SH 1	18SE1967	0.00577 ) (

*Caloneis ventricosa* var. *truncatula* (Grun.) Meist.

*Navicula ventricosa* var. *truncatula* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 12, fig. 25. 1880.

*Caloneis ventricosa* var. *truncatula* (Grun.) Meister, Beitr. Kryptog.-Fl. Schweiz, 4(1):116, pl. 17, fig. 5. 1912.

96 CAVENTVT TOT NO OF STATIONS 30

( 3540	CH	11MY1879	0.00932 )	( 3541	CH	1FE1881	0.01956 )	(46921	CH	23NO1945	C.00129 )
(46923	CH	22NO1946	0.00437 )	(46920	CH	20DE1946	0.00031 )	(46905	CH	JA1947	C.00123 )
(46916	CH	4MY1947	0.00102 )	(46907	CH	JL1947	C.00049 )	(46922	CH	21AU1947	C.00194 )
(46758	EV	5JN1937	0.03209 )	(46771	EV	11JN1937	0.00238 )	(46743	EV	20JN1937	C.02141 )
(46770	EV	9JL1937	0.01785 )	(46764	EV	17JL1937	0.04835 )	(46757	EV	25JL1937	C.02407 )
(46747	EV	1AU1937	0.01485 )	(46763	EV	23AU1937	0.06088 )	(46752	EV	15SE1937	C.04354 )
(46760	EV	22SE1937	0.00492 )	(46750	EV	24SE1937	0.00471 )	(46748	EV	13OC1937	C.02135 )
(46767	EV	27OC1937	0.00387 )	(46749	EV	12MR1938	0.01214 )	( 1270	F 1	10AU1944	C.00272 )
( 1388	GS12	12MY1967	0.00603 )	( 1292	GS16	12MY1967	0.00308 )	( 1565	GS13	50C1967	C.01521 )
( 1566	GS14	50C1967	0.00183 )	( 1574	GS22	60C1967	C.00575 )	( 1545	HL 1	20C1967	C.00676 )

### Species incertae sedis

*Caloneis* sp. #2.

97 CASPECGB TCT NO OF STATIONS 1

(46919	CH	5JN1947	0.00152 )	(
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*Caloneis* sp. #3.

98 CASPECGB TCT NO OF STATIONS 10

(46910	CH	0C1945	0.00109 )	(46758	EV	5JN1937	C.01070 )	(46771	EV	11JN1937	C.00238 )
(46770	EV	9JL1937	0.00596 )	(46764	EV	17JL1937	C.10475 )	(46757	EV	25JL1937	C.03370 )
(46747	EV	1AU1937	0.01733 )	(46765	EV	30AU1937	C.00558 )	(46752	EV	15SE1937	C.04354 )
( 1388	GS12	12MY1967	0.01207 )	(							

### Genus *Campylodiscus* Ehr.

Ehrenberg, Ber. Akad. Wiss. Berlin, 1840:207. 1841.

The single species of *Campylodiscus* that occurs in our collections reaches its maximum abundance in epipelagic communities in hardwater lakes. In such localities it is occasionally noted in the plankton and is apparently a successful facultative plankton.

*Campylodiscus noricus* var. *hibernica* (Ehr.) Grun.

*Campylodiscus hibernicus* Ehrenberg, Ber. Akad. Wiss. Berlin, 1845:154. 1845.

*Campylodiscus noricus* var. *hibernica* (Ehr.) Grunow, Verh. Zool.-Bot. Ges. Wien, 12:439. 1862.

99 CMNDRIVH TCT NO OF STATIONS 1

(60973	CH	1876	0.02362 )	(
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### Genus *Capartogramma* Kuff.

Kufferath, Expl. Hydrobiol. Lake Tanganyika (1946-1947)

Res. Sci. 4(3):27. 1956.

Only a single species of *Capartogramma* occurs in our collections. Previous reports of its distribution indicate that it reaches its maximum abundance in brackish water habitats although it is also found in limited abundance in strictly fresh water. In Lake Michigan its distribution appears to be restricted to shallow, eutrophied bays where it probably grows in epipelagic or periphyton communities.

*Capartogramma crucicula* (Grun. ex Cleve) Ross

*Schizostauron crucicula* Grunow ex Cleve, K. Svenska Vet.-Akad. Handl.,  
Ny Följd, 18(5):16, pl. 3, fig. 44. 1881.

*Capartogramma crucicula* (Grun. ex Cleve) Ross, Bull. British Mus. (Nat.  
His.), 3(2):59, figs. 8-11. 1963.

100 CPSPECCA TCT NO OF STATIONS 3

( 1395 GS19 13MY1967 0.00117 ) ( 1571 GS19 60C1967 0.00059 ) ( 1550 MR 1 50C1967 0.03717 )

Genus *Cocconeis* Ehr.

Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1835:173. 1837.

Members of the genus *Cocconeis* are particularly adapted to epiphytic growth on larger algae or on aquatic vascular plants. Plankton collections from Lake Michigan often contain at least a few representatives of the genus. Most of these are probably derived from communities other than the plankton but it appears that at least some of the smaller species are secondarily planktonic in that they attach to larger euplanktonic algae.

*Cocconeis diminuta* Pant.

*Cocconeis diminuta* Pantocsek, Res. Wiss. Erforsch. Balatonsees, Vol. 2.  
Pt. 2, Sec. 1, p. 67, pl. 7, fig. 181. 1902.

101 CCDIMINU TCT NO OF STATIONS 63

( 146766	EV	14DE1538	0.01584 )	( 1244	F 1	11JN1964	0.00110 )	( 1258	F 1	6JL1964	0.00236 )
( 1268	E 2	15AU1964	0.00274 )	( 1270	F 1	10AU1964	0.00272 )	( 1279	E 1	16SE1964	0.00393 )
( 1300	E 3	13OC1964	0.00358 )	( 1431	A 3	12JN1967	0.00257 )	( 1537	E 3	24SE1967	0.00431 )
( 1541	E 2	11OC1967	0.02129 )	( 1542	E 3	11OC1967	0.01526 )	( 1383	GS 7	10MY1967	0.00267 )
( 1386	GS10	12MY1967	0.00287 )	( 1387	GS11	12MY1967	0.01188 )	( 1388	GS12	12MY1967	0.00603 )
( 1391	GS15	12MY1967	0.00479 )	( 1392	GS16	12MY1967	0.01233 )	( 1393	GS17	13MY1967	0.00548 )
( 1394	GS18	13MY1967	0.00516 )	( 1395	GS19	13MY1967	0.00117 )	( 1396	GS20	13MY1967	0.00074 )
( 1398	GS22	14MY1967	0.00304 )	( 1554	GS 1	30C1967	0.01067 )	( 1556	GS 3	30C1967	0.01564 )
( 1557	GS 4	30C1967	0.00374 )	( 1558	GS 5	40C1967	0.00793 )	( 1559	GS 7	40C1967	0.00699 )
( 1560	GS 8	40C1967	0.00472 )	( 1561	GS 9	40C1967	0.00587 )	( 1565	GS13	50C1967	0.02484 )
( 1566	GS14	50C1967	0.00183 )	( 1567	GS15	50C1967	0.00318 )	( 1571	GS19	60C1967	0.00234 )
( 1572	GS20	60C1967	0.00180 )	( 1573	GS21	60C1967	0.00112 )	( 1574	GS22	60C1967	0.02013 )
( 1575	GS28	60C1967	0.00129 )	( 1544	MU 1	20C1967	0.00238 )	( 1547	MS 1	20C1967	0.00798 )
( 1546	LU 1	20C1967	0.03001 )	( 1522	BH 1	18SE1967	0.00182 )	( 1523	RA 1	19SE1967	0.00923 )
( 1525	PH 1	20SE1967	0.04178 )	( 1526	MO 1	20SE1967	0.00569 )	( 1527	TR 1	20SE1967	0.02516 )
( 1529	KW 1	20SE1967	0.03598 )	( 1530	FR 1	24SE1967	0.06001 )	( 1545	WL 1	20C1967	0.08109 )
( 1548	CA 1	30C1967	0.01272 )	( 1549	MC 1	40C1967	0.02741 )	( 1551	ES 1	50C1967	0.02396 )
( 1550	MR 1	50C1967	1.84612 )	( 1553	SG 1	60C1967	0.03672 )	( 1426	PS 2	29MY1967	0.18898 )
( 1427	LU 2	25MY1967	0.07264 )	( 1417	HC 2	22MY1967	0.00748 )	( 1350	BH 2	19AP1967	0.04185 )
( 1401	MO 2	6MY1967	0.00588 )	( 1354	GH 2	25AP1967	0.00690 )	( 1429	WL 2	29MY1967	0.01062 )
( 1404	MO 2	10MY1967	0.02541 )	( 1405	ES 2	12MY1967	0.01290 )	( 1407	SM 2	14MY1967	0.01791 )

*Cocconeis disculus* (Schum.) Cleve

*Navicula disculus* Schumann, Schrift. Phys.-Ökon. Ges. Königsburg, 5:21,  
pl. 2, fig. 23. 1864.

*Cocconeis disculus* (Schum.) Cleve in: Cleve and Jentzsch, Schrift. Phys.-  
Ökon. Ges. Königsburg, 22:129. 1882.

102 CCDISCU TCT NO OF STATIONS 18

( 160973	CH	1876	0.02362 )	( 3541	CH	1FE1881	0.00978 )	( 1279	E 1	16SE1964	0.00393 )
( 1541	E 2	11OC1967	0.00532 )	( 1394	GS18	13MY1967	0.00172 )	( 1396	GS20	13MY1967	0.00074 )
( 1554	GS 1	30C1967	0.00356 )	( 1557	GS 4	30C1967	0.00374 )	( 1559	GS 7	40C1967	0.00350 )
( 1561	GS 9	40C1967	0.00587 )	( 1567	GS15	50C1967	0.00159 )	( 1573	GS21	60C1967	0.00112 )
( 1574	GS22	60C1967	0.00288 )	( 1545	WL 1	20C1967	0.01351 )	( 1550	MR 1	50C1967	0.02478 )
( 1553	SG 1	60C1967	0.00734 )	( 1426	MS 2	29MY1967	0.03150 )	( 1354	GH 2	25AP1967	0.00173 )

*Cocconeis pediculus* Ehr.

*Cocconeis pediculus* Ehrenberg, Infusionsthierchen, p. 194, pl. 21, fig. 11.  
1838.

## 103 COPECICU TOT NO OF STATIONS 100

( 3540	CH	11MY1879	0.03261 )	( 3507	CH	19FE1881	0.01132 )	( 46917	CH	12JA1946	C.00083 )
( 46914	CH	19AP1946	0.00107 )	( 46923	CH	22NO1946	0.00656 )	( 46920	CH	20DE1946	C.00062 )
( 46916	CH	4MY1947	0.00068 )	( 46919	CH	5JN1947	0.00303 )	( 46907	CH	JL1947	C.00099 )
( 46922	CH	21AU1947	0.00194 )	( 46758	EV	5JN1937	0.02140 )	( 46770	EV	9JL1937	C.00596 )
( 46764	EV	17JL1937	0.02417 )	( 46757	EV	25JL1937	0.02407 )	( 46747	EV	1AU1937	C.17328 )
( 46763	EV	23AU1937	3.77435 )	( 46765	EV	30AU1937	0.02231 )	( 46752	EV	15SE1937	4.C4876 )
( 46760	EV	22SE1937	0.07878 )	( 46750	EV	24SE1937	0.07070 )	( 46744	EV	60C1937	C.03414 )
( 46748	EV	130C1937	0.74722 )	( 46767	EV	270C1937	0.03095 )	( 46749	EV	12MR1938	C.09710 )
( 46768	EV	16MR1938	0.10290 )	( 46762	EV	18MR1938	3.52889 )	( 46751	EV	30MR1938	0.05583 )
( 46766	EV	14DE1938	0.03169 )	( 1272	C* 1	10SE1964	C.00410 )	( 1278	D 6	18SE1964	C.00384 )
( 1279	E 1	16SE1964	0.00393 )	( 1284	E 6	17SE1964	0.00318 )	( 1300	E 3	130C1964	0.00358 )
( 1316	D 6	9ND1964	C.00378 )	( 1452	E 2	14JL1967	0.00213 )	( 1533	A 4	19SE1967	C.00464 )
( 1534	A 6	19SE1967	0.00310 )	( 1536	E 2	24SE1967	0.02999 )	( 1537	E 3	24SE1967	C.01725 )
( 1538	E 5	23SE1967	1.41413 )	( 1540	C 5	40C1967	C.00496 )	( 1542	E 3	110C1967	C.01526 )
( 1543	E 5	100C1967	0.00718 )	( 1388	GS12	12MY1967	0.00603 )	( 1395	GS19	13MY1967	C.00117 )
( 1397	GS21	13MY1967	0.00131 )	( 1398	GS22	14MY1967	0.00304 )	( 1557	GS 4	30C1967	C.00747 )
( 1559	GS 7	40C1967	0.00699 )	( 1561	GS 9	40C1967	0.01174 )	( 1563	GS11	50C1967	C.00935 )
( 1564	GS12	50C1967	0.00165 )	( 1565	GS13	50C1967	0.01014 )	( 1566	GS14	50C1967	C.00550 )
( 1567	GS15	50C1967	0.06668 )	( 1568	GS16	50C1967	0.00433 )	( 1569	GS17	50C1967	C.00531 )
( 1570	GS18	50C1967	0.02975 )	( 1571	GS19	60C1967	0.00585 )	( 1572	GS20	60C1967	C.00180 )
( 1573	GS21	60C1967	0.01232 )	( 1574	GS22	60C1967	0.08745 )	( 1575	GS28	60C1967	C.00387 )
( 1567	MS 1	20C1967	0.01597 )	( 1524	MI 1	20SE1967	0.13135 )	( 1546	LU 1	20C1967	C.01050 )
( 1520	HO 1	18SE1967	0.05658 )	( 1521	SH 1	18SE1967	0.04616 )	( 1522	BH 1	18SE1967	C.00182 )
( 1523	RA 1	19SE1967	0.03650 )	( 1525	PH 1	20SE1967	0.38992 )	( 1526	MG 1	20SE1967	2.73084 )
( 1527	TR 1	20SE1967	4.12579 )	( 1528	SB 1	20SE1967	0.69304 )	( 1529	KW 1	20SE1967	6.52356 )
( 1530	FR 1	24SE1967	0.38004 )	( 1531	GH 1	25SE1967	0.00845 )	( 1545	WL 1	20C1967	1.62173 )
( 1548	CA 1	30C1967	0.26714 )	( 1552	SM 1	60C1967	0.03301 )	( 1550	MR 1	50C1967	C.02354 )
( 1553	SG 1	60C1967	0.00734 )	( 1426	MS 2	29MY1967	C.01050 )	( 1351	MI 2	21AP1967	C.00310 )
( 1427	LU 2	29MY1967	0.02421 )	( 1417	HO 2	22MY1967	0.00374 )	( 1350	BH 2	19AP1967	C.07048 )
( 1401	MO 2	6MY1967	0.14699 )	( 1402	TR 2	6MY1967	C.05956 )	( 1400	SB 2	6MY1967	C.02383 )
( 1353	FR 2	23AP1967	0.01055 )	( 1354	GH 2	25AP1967	0.00345 )	( 1429	WL 2	29MY1967	C.01062 )
( 1404	MO 2	14MY1967	0.01270 )	( 1407	SM 2	14MY1967	0.00597 )	( 1349	CI 2	19AP1967	C.01078 )
( 1406	GB 2	13MY1967	0.01617 )	( 1419	BU 2	23MY1967	0.01831 )	( 1420	IH 2	23MY1967	C.01511 )
( 1423	WA 2	25MY1967	0.00428 )	(							

*Cocconeis placentula* Ehr.*Cocconeis placentula* Ehrenberg, Infusionsthierchen, p. 194. 1838.

## 104 COPLACEN TOT NO OF STATIONS 27

( 46751	EV	30MR1938	0.02233 )	( 1244	F 1	11JN1964	C.00110 )	( 1278	D 6	18SE1964	C.00384 )
( 1304	F 1	110C1964	0.00247 )	( 1324	F 2	6ND1964	0.00233 )	( 1504	A 3	28AU1967	C.00247 )
( 1537	E 3	24SE1967	0.00863 )	( 1538	E 5	23SE1967	0.00552 )	( 1539	C 3	40C1967	C.00503 )
( 1540	C 5	40C1967	0.01985 )	( 1541	E 2	110C1967	0.00532 )	( 1542	E 3	110C1967	C.01526 )
( 1555	GS 2	30C1967	0.01059 )	( 1559	GS 7	40C1967	0.00350 )	( 1562	GS10	50C1967	C.00247 )
( 1567	GS15	50C1967	0.00635 )	( 1569	GS17	50C1967	0.00149 )	( 1572	GS20	60C1967	C.00090 )
( 1574	GS22	60C1967	0.01151 )	( 1544	MU 1	20C1967	0.00715 )	( 1522	BH 1	18SE1967	C.00182 )
( 1531	GH 1	25SE1967	0.00845 )	( 1545	WL 1	20C1967	0.02027 )	( 1428	MU 2	29MY1967	C.00904 )
( 1350	BH 2	19AP1967	0.01322 )	( 1404	MC 2	10MY1967	0.01270 )	( 1407	SM 2	14MY1967	C.00597 )

*Cocconeis placentula* var. *euglypta* (Ehr.) Cleve*Cocconeis euglypta* Ehrenberg, Mikrogeol., pl. 34(6A), fig. 2. 1854.*Cocconeis placentula* var. *euglypta* (Ehr.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Förljd, 27(3):170. 1896.

## 105 COPLACVE TOT NO OF STATIONS 127

( 60973	CH	1876	0.02362 )	( 3541	CH	1FE1881	0.01956 )	( 46910	CH	0C1945	C.00109 )
( 46921	CH	23NO1945	0.00065 )	( 46917	CH	12JA1946	0.00028 )	( 46923	CH	22NO1946	0.00656 )
( 46907	CH	JL1947	C.00099 )	( 46922	CH	21AU1947	0.00048 )	( 46743	EV	20JN1937	C.00428 )
( 46747	EV	1AU1937	0.00248 )	( 46752	EV	15SE1937	0.04354 )	( 46760	EV	22SE1937	0.00492 )
( 46768	EV	16MR1938	0.01470 )	( 46766	EV	14DE1938	0.01584 )	( 1229	D 5	14MY1964	C.00423 )
( 1236	C* 1	8JN1964	0.00175 )	( 1240	D 6	10JN1964	0.00153 )	( 1243	E 6	13JN1964	C.00209 )
( 1244	F 1	11JN1964	0.00219 )	( 1245	F 2	11JN1964	0.00346 )	( 1258	F 1	6JL1964	C.01416 )
( 1259	F 2	6JL1964	0.01239 )	( 1260	F 3	6JL1964	0.00191 )	( 1264	C* 1	10AU1964	C.00575 )
( 1267	D 6	18AU1964	0.00216 )	( 1268	E 2	15AU1964	C.01094 )	( 1270	F 1	10AU1964	C.01089 )
( 1279	E 1	16SE1964	0.01178 )	( 1280	E 2	16SE1964	0.00681 )	( 1284	E 6	17SE1964	0.01271 )
( 1285	F 1	15SE1964	0.11648 )	( 1286	F 2	15SE1964	0.01095 )	( 1287	F 3	15SE1964	0.00500 )
( 1289	C 7	140C1964	0.00440 )	( 1291	C* 2	160C1964	0.00245 )	( 1297	D 6	140C1964	C.00190 )
( 1299	E 2	120C1964	0.00314 )	( 1302	E 5	130C1964	C.00405 )	( 1303	E 6	130C1964	C.00560 )
( 1304	F 1	110C1964	0.00247 )	( 1305	F 2	110C1964	0.00173 )	( 1306	F 3	110C1964	C.00277 )
( 1341	A 3	19AP1967	0.01410 )	( 1370	A 6	3MY1967	C.00230 )	( 1373	C 7	5MY1967	C.00285 )
( 1374	E 2	7MY1967	0.00299 )	( 1416	E 5	28MY1967	C.01093 )	( 1446	A 3	11JL1967	C.00245 )
( 1448	A 6	10JL1967	0.00354 )	( 1511	E 2	1SE1967	0.00614 )	( 1533	A 4	19SE1967	C.00464 )
( 1536	E 2	24SE1967	0.00545 )	( 1538	E 5	23SE1967	C.01657 )	( 1540	C 5	40C1967	C.00496 )
( 1542	E 3	110C1967	0.07628 )	( 1543	E 5	10CC1967	0.01437 )	( 1377	GS 1	9MY1967	C.00396 )
( 1380	GS 4	9MY1967	0.00168 )	( 1383	GS 7	10MY1967	0.00535 )	( 1385	GS 9	10MY1967	C.00235 )
( 1386	GS10	12MY1967	0.00575 )	( 1387	GS11	12MY1967	0.02772 )	( 1388	GS12	12MY1967	C.03620 )
( 1390	GS14	12MY1967	0.01174 )	( 1392	GS16	12MY1967	0.02157 )	( 1393	GS17	13MY1967	C.00274 )
( 1394	GS18	13MY1967	0.00172 )	( 1395	GS19	13MY1967	0.00470 )	( 1398	GS22	14MY1967	C.00304 )
( 1554	GS 1	30C1967	0.02846 )	( 1555	GS 2	30C1967	0.39901 )	( 1556	GS 3	30C1967	C.10429 )
( 1557	GS 4	30C1967	0.07474 )	( 1558	GS 5	40C1967	0.05549 )	( 1559	GS 7	40C1967	C.16087 )
( 1560	GS 8	40C1967	0.06140 )	( 1561	GS 9	40C1967	0.01174 )	( 1562	GS10	50C1967	C.00740 )
( 1563	GS11	50C1967	0.01871 )	( 1564	GS12	50C1967	0.00329 )	( 1565	GS13	50C1967	C.00578 )
( 1566	GS14	50C1967	0.01101 )	( 1567	GS15	50C1967	0.04287 )	( 1568	GS16	50C1967	C.00577 )
( 1569	GS17	50C1967	0.00297 )	( 1570	GS18	50C1967	0.03967 )	( 1571	GS19	60C1967	C.00195 )

( 1572	GS20	6CC1967	0.00361 )	( 1573	GS21	6CC1967	0.00896 )	( 1574	GS22	6CC1967	0.36530 )
( 1575	GS28	6CC1967	0.01677 )	( 1544	MU 1	20C1967	0.01430 )	( 1547	MS 1	20C1967	0.06387 )
( 1524	MI 1	20SE1967	0.76620 )	( 1546	LU 1	20C1967	0.09003 )	( 1520	MO 1	18SE1967	0.00943 )
( 1521	SH 1	18SE1967	0.02885 )	( 1522	BH 1	18SE1967	0.03100 )	( 1526	MO 1	20SE1967	0.04551 )
( 1527	TR 1	20SE1967	0.11321 )	( 1529	KW 1	20SE1967	0.04797 )	( 1530	FR 1	24SE1967	0.11001 )
( 1531	GH 1	25SE1967	0.02536 )	( 1545	WL 1	20C1967	0.29732 )	( 1548	CA 1	30C1967	0.01272 )
( 1549	MQ 1	40C1967	0.45224 )	( 1551	ES 1	50C1967	0.27957 )	( 1552	SM 1	60C1967	0.03962 )
( 1550	MR 1	50C1967	15.85925 )	( 1553	SG 1	60C1967	0.08079 )	( 1428	MU 2	29MY1967	0.02109 )
( 1426	MS 2	29MY1967	0.02100 )	( 1427	LU 2	29MY1967	0.02421 )	( 1417	MO 2	22MY1967	0.02243 )
( 1418	SH 2	22MY1967	0.01555 )	( 1350	BH 2	19AP1967	1.33918 )	( 1401	MO 2	6MY1967	0.04116 )
( 1402	TR 2	6MY1967	0.02707 )	( 1400	SB 2	6MY1967	0.01787 )	( 1352	KW 2	21AP1967	0.01718 )
( 1354	GH 2	25AP1967	0.00345 )	( 1403	CA 2	10MY1967	0.01308 )	( 1404	MQ 2	10MY1967	0.10163 )
( 1405	ES 2	12MY1967	0.03225 )	( 1407	SM 2	14MY1967	0.04777 )	( 1406	GB 2	13MY1967	0.01348 )
( 1422	GA 2	23MY1967	0.00511 )	(							

*Cocconeis placentula* var. *lineata* (Ehr.) V. H.

*Cocconeis lineata* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1847, pl. 5(1), fig. 10. 1849.

*Cocconeis placentula* var. *lineata* (Ehr.) Van Heurck, Syn. Diat. Belgique, p. 133. 1885.

106 CCPLACVL TCT NO OF STATIONS 49											
( 1396	GS20	13MY1967	0.00074 )	( 1397	GS21	13MY1967	0.00065 )	( 1554	GS 1	30C1967	0.00712 )
( 1555	GS 2	30C1967	0.09887 )	( 1556	GS 3	30C1967	0.05736 )	( 1557	GS 4	30C1967	0.00374 )
( 1558	GS 5	40C1967	0.01189 )	( 1559	GS 7	40C1967	0.02098 )	( 1561	GS 9	40C1967	0.00587 )
( 1563	GS11	50C1967	0.00468 )	( 1565	GS13	50C1967	0.02028 )	( 1566	GS14	50C1967	0.00183 )
( 1567	GS15	50C1967	0.01746 )	( 1569	GS17	50C1967	0.00446 )	( 1570	GS18	50C1967	0.42642 )
( 1571	GS19	60C1967	0.00995 )	( 1573	GS21	60C1967	0.00224 )	( 1575	GS28	60C1967	0.01032 )
( 1544	MU 1	20C1967	0.01668 )	( 1547	MS 1	20C1967	0.07984 )	( 1524	MI 1	20SE1967	0.54729 )
( 1546	LU 1	20C1967	0.05502 )	( 1520	HQ 1	18SE1967	0.02357 )	( 1521	SH 1	18SE1967	0.01154 )
( 1522	BH 1	18SE1967	0.01276 )	( 1527	TR 1	20SE1967	0.05660 )	( 1529	KW 1	20SE1967	0.04797 )
( 1530	FR 1	24SE1967	0.02000 )	( 1531	GH 1	25SE1967	0.00845 )	( 1545	WL 1	20C1967	0.29732 )
( 1548	CA 1	30C1967	0.08905 )	( 1549	MQ 1	40C1967	0.12334 )	( 1551	ES 1	50C1967	0.03994 )
( 1552	SM 1	60C1967	0.01321 )	( 1550	MR 1	50C1967	3.56833 )	( 1553	SG 1	60C1967	0.02203 )
( 1428	MU 2	29MY1967	0.01808 )	( 1426	MS 2	29MY1967	0.04304 )	( 1351	MI 2	21AP1967	0.00621 )
( 1427	LU 2	29MY1967	0.07264 )	( 1417	HQ 2	22MY1967	0.01122 )	( 1350	BH 2	15AP1967	0.25330 )
( 1354	GH 2	25AP1967	0.03452 )	( 1429	WL 2	29MY1967	0.05308 )	( 1404	MC 2	10MY1967	0.12703 )
( 1405	ES 2	12MY1967	0.02580 )	( 1407	SM 2	14MY1967	0.04777 )	( 1349	CI 2	19AP1967	0.00718 )
( 1406	GB 2	13MY1967	0.02157 )	(							

*Cocconeis thumensis* A. Mayer

*Cocconeis thumensis* A. Mayer, Bayerisch Kryptog. Forsch., 1:199, pl. 6, fig. 24. 1919.

107 CCTHUMEN TCT NO OF STATIONS 21											
( 60973	CH	1876	0.02362 )	( 46516	CH	4MY1947	0.00034 )	( 1255	D 5	15JL1964	0.00257 )
( 1256	E 2	14JL1964	0.00183 )	( 1259	F 2	6JL1964	0.00310 )	( 1268	E 2	15AU1964	0.00274 )
( 1279	E 1	16SE1964	0.00393 )	( 1285	F 1	15SE1964	0.01165 )	( 1251	C* 2	16CC1964	0.00245 )
( 1294	D 3	15CC1964	0.00330 )	( 1311	D 1	8NO1964	0.00258 )	( 1344	C 3	25AP1967	0.00165 )
( 1347	E 2	23AP1967	0.00163 )	( 1370	A 6	3MY1967	0.00230 )	( 1375	E 3	7MY1967	0.00241 )
( 1543	E 5	10CC1967	0.00718 )	( 1382	GS 6	10MY1967	0.00278 )	( 1392	GS16	12MY1967	0.00308 )
( 1394	GS18	13MY1967	0.00172 )	( 1555	GS 2	30C1967	0.01059 )	( 1557	GS 4	30C1967	0.00374 )

*Species incertae sedis*

*Cocconeis* sp. #2.

108 CCSPECCB TCT NO OF STATIONS 17											
( 46909	CH	MR1947	0.00455 )	( 1258	F 1	6JL1964	0.00236 )	( 1279	E 1	16SE1964	0.00393 )
( 1285	F 1	15SE1964	0.01165 )	( 1541	E 2	11CC1967	0.00532 )	( 1395	GS19	13MY1967	0.00117 )
( 1554	GS 1	30C1967	0.00356 )	( 1555	GS 2	30C1967	0.00353 )	( 1556	GS 3	30C1967	0.00521 )
( 1562	GS10	50C1967	0.00247 )	( 1573	GS21	60C1967	0.00112 )	( 1574	GS22	60C1967	0.01151 )
( 1527	TR 1	20SE1967	0.01258 )	( 1530	FR 1	24SE1967	0.01000 )	( 1545	WL 1	20C1967	0.00676 )
( 1550	MR 1	50C1967	0.02478 )	( 1350	BH 2	19AP1967	0.00441 )	(			

*Cocconeis* sp. #3.

109 CCSPECCC TCT NO OF STATIONS 9											
( 3540	CH	11MY1879	0.00466 )	( 1268	E 2	15AU1964	0.00274 )	( 1270	F 1	10AU1964	0.00189 )
( 1303	E 6	13CC1964	0.00560 )	( 1304	F 1	11CC1964	0.00247 )	( 1313	D 3	9NC1964	0.00193 )
( 1345	C 5	25AP1967	0.00195 )	( 1541	E 2	11CC1967	0.01064 )	( 1543	E 5	10CC1967	0.00718 )

*Cocconeis* sp. #4.

110 COSPECOD TCT NO OF STATIONS 11											
(46768	EV	16MR1938	0.01470 )	( 1305	F 2	110C1964	0.00173 )	( 1452	E 2	14JL1967	C.00213 )
( 1392	GS16	12MY1967	0.00308 )	( 1396	GS20	13MY1967	0.00074 )	( 1398	GS22	14MY1967	C.00304 )
( 1558	GS 5	40C1967	0.00396 )	( 1565	GS13	50C1967	0.02535 )	( 1526	MO 1	20SE1967	C.00569 )
( 1527	TR 1	20SE1967	0.00629 )	( 1350	BH 2	19AP1967	0.00661 )	(			

*Cocconeis* sp. #5.

111 COSPECODE TCT NO OF STATIONS 3											
( 1279	E 1	16SE1964	0.00393 )	( 1530	FR 1	24SE1967	C.01000 )	( 1545	WL 1	20C1967	0.00676 )

*Cocconeis* sp. #6.

112 COSPECOD TCT NO OF STATIONS 2										
( 1449	C 3	16JL1967	0.00382 )	( 1557	GS 4	30C1967	0.00374 )	(		



Genus *Coscinodiscus* Ehrenberg  
Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1838:128. 1840.

*Coscinodiscus subsalsa* Juhl.-Dannf.

*Coscinodiscus subsalsa* Juhlin-Dannfelt, Bih. K. Svenska Vet.-Akad. Handl., 6(21):47, pl. 3, fig. 33. 1882.

Cells circular in valve view and rectangular in girdle view. Vegetative cells occur singly or in short colonies of up to 10 cells. Valves of specimens from Lake Michigan 16-42 $\mu$  in diameter. The valve surface may be either simply concave or concave near the margins and convex in the middle. Ornamentation of the valve surface is composed of conspicuous areolae which are circular in surface focus and more or less hexagonal in deep focus. Areolae in the central portion of the valve coarse, about 10 in 10 $\mu$ , becoming much finer, about 20 in 10 $\mu$ , near the margins. Near the periphery of the valve there are several (usually 4-6) slime pores each subtended by a fungiform projection into the interior of the frustule. In living cells long, gelatinous strands extend from these pores. The ornamentation of the valve surface tends to be arranged in loose fascicles that focus on the pores giving a stellate appearance.

The systematic position of this entity is somewhat uncertain. Many authorities consider it to be a variety or form of either *C. rothii* or *C. subtilis*. Its recorded distribution indicates a preference for brackish water or waters of high total dissolved solids in inland regions. At the present time it is established in polluted harbors and nearshore waters of Lake Michigan and has become one of the dominant species in the summer plankton of Lake Erie.

113 CSROTHVS TOT NO OF STATIONS 13											
( 1230	E 2	16MY1964	0.00296 )	( 1259	F 2	6JL1964	0.00310 )	( 1264	C* 1	10AU1964	0.01545 )
( 1265	C* 2	10AU1964	0.00224 )	( 1272	C* 1	10SE1964	0.01231 )	( 1279	E 1	16SE1964	0.00393 )
( 1298	E 1	12OC1964	0.00269 )	( 1302	E 5	13OC1964	0.00405 )	( 1408	A 3	23MY1967	0.00447 )
( 1416	E 5	28MY1967	0.00219 )	( 1536	E 2	24SE1967	0.00273 )	( 1539	C 3	40C1967	0.00503 )
( 1568	GS16	50C1967	0.00144 )								

*Species incertae sedis*

*Coscinodiscus* sp. (aff. *C. tuberculatus*).

114 CSTUBEVO TOT NO OF STATIONS 1				
( 1264	C* 1	10AU1964	0.00386 )	(

Genus *Cyclotella* Kütz.  
Kützinger, Syn. Diat. p. 7. 1834.

*Cyclotella antiqua* Wm. Smith

*Cyclotella antiqua* Wm. Smith, Syn. British Diat., p. 28, pl. 5, fig. 49. 1853.

Cells cylindrical with concentrically undulate valves, either concave or convex in the center. Specimens from Lake Michigan from 12-30 $\mu$  in diameter. The marginal zone is narrow, only about one-third the radius of the valve. The marginal striae are about 16-18 in 10 $\mu$  at the margin, without visible substructure and irregular in length. Regularly spaced thickened ribs, below the plane of focus of the striae, appear as "shadow lines" near the margin of the valve, about 5-7 in 10 $\mu$ . The margin of the central area of the valve is ornamented with conspicuous conical depressions of the surface whose surface is covered with fine, irregularly arranged puncta. The base of the conical depression is toward the valve margin and the apex toward the center. The number of these depressions is variable, depending on the size of the valve, but usually 6-8 are present. The rest of the central surface of the valve may be without ornamentation or may have a greater or lesser number of randomly arranged punctae of varying sizes.

This species is very distinctive in appearance and is not easily confused with any other member of the genus occurring in Lake Michigan. It is never a numerically important part of the plankton populations of the lake but numerous examples have been found, particularly in samples from the northern portion of the lake. Previous reports of its distribution indicate that it reaches its greatest abundance in northern and alpine oligotrophic lakes.

115 CYANTIQUE TCT AC CF STATIONS 13											
( 1270	F 1	1CAU1964	0.03812 )	( 1285	F 1	15SE1964	0.04077 )	( 1291	C* 2	16OC1964	C.CC245 )
( 1387	GS11	12MY1967	0.00396 )	( 1397	GS21	13MY1967	0.00065 )	( 1557	GS 4	30C1967	0.00374 )
( 1558	GS 5	40C1967	0.01189 )	( 1559	GS 7	40C1967	0.00699 )	( 1560	GS 8	40C1967	C.C1417 )
( 1561	GS 9	40C1967	0.00587 )	( 1562	GS10	50C1967	0.01727 )	( 1548	CA 1	30C1967	C.C1272 )
( 1549	MQ 1	40C1967	0.02741 )								

#### *Cyclotella atomus* Hust.

*Cyclotella atomus* Hust., Archiv f. Hydrobiol., Suppl. Bd. 15:143, pl. 9, figs. 1-4. 1938.

Cells cylindrical with excentrically undulate valves. Specimens from Lake Michigan 2.5-5 $\mu$  in diameter. The marginal zone is narrow, only one-quarter the radius of the valve. The marginal striae are about 16-18 in 10 $\mu$ , without visible substructure. The striae appear as thickened ribs under the light microscope and every fourth or fifth one appears to be more thickened than the others. The only visible ornamentation in the central portion of the valve is a single, rather large, puncta. This structure is usually located about one-half the distance from the center of the valve to inner edge of the marginal striae. Because of the uniformly small size of this species the undulation of the valve can only be seen from the girdle view. The cells are rectangular in girdle view with the length of the perivalvar axis being about one-half the valve diameter.

Although this species was originally described from the tropics, its distinctive morphology leaves little doubt of the correct assignment of the specimens from Lake Michigan to it. At present it is quite rare in the flora of the lake. Our records come from inshore areas that receive appreciable chloride contamination. Previous reports from Lake Michigan are lacking.

## 116 CYATOMUS TCT NO OF STATIONS 8

( 1240	D 6	10JN1964	0.00153 )	( 1255	D 5	15JL1964	0.00257 )	( 1273	C* 2	10SE1964	C.00538 )
( 1446	A 3	11JL1967	0.00245 )	( 1451	C 7	16JL1967	0.00394 )	( 1520	HO 1	18SE1967	0.00943 )
( 1521	SH 1	18SE1967	0.01154 )	( 1350	BH 2	19AP1967	0.42290 )	(			

*Cyclotella comta* (Ehr.) Kütz.

*Discoplea comta* Ehr., Ber. Akad. Wiss. Berlin, 1842:267. 1844.

*Cyclotella comta* (Ehr.) Kütz., Sp. Alg., p. 20. 1849.

Cells cylindrical with concentrically undulate valves, either concave or convex in the center. Specimens from Lake Michigan 7.5-55 $\mu$  in diameter. Marginal zone about one-half the radius of the valve. Striae in the marginal zone about 13-18 in 10 $\mu$  at the valve margin, with barely visible substructure composed of two rows of fine puncta. This feature can be resolved with certainty only in the larger individuals. Most of the striae are of the same length and form an even inner margin, but numerous shortened striae of irregular length are interposed between them and there are often 1-6 more or less conspicuous slime pores at the margin of the zone that are subtended by shortened striae. At the outer margin of the valve a row of chambers occurs below the level of the striae. One of these chambers usually subtends the base of two striae and appears as a "shadow line" between the striae pairs at high focus. In the smaller individuals these chambers appear as thickenings near the margin of the valve. The ornamentation of the central area is highly irregular in this taxon. In the larger individuals the central area is ornamented with randomly arranged small puncta. In the smaller individuals the puncta become compressed and may assume a more or less regular appearance. Many authorities distinguish several varieties on the basis of the arrangement of the central punctae. While this segregation appears feasible when working with isolated populations, our observations lead us to believe that the cited variations grade into one another so that no morphologic distinction can be made.

## 117 CYCMTA TCT NO OF STATIONS 302

( 160973	CH	1876	2.92867 )	( 3540	CH	11MY1879	0.13978 )	( 3541	CH	1FE1881	1.54553 )
( 3507	CH	19FE1881	0.05660 )	( 46510	CH	0C1945	0.02403 )	( 46921	CH	23NO1945	C.12611 )
( 46908	CH	DE1945	0.03021 )	( 46517	CH	12JA1946	0.09898 )	( 46915	CH	20FE1946	0.06829 )
( 46914	CH	19AP1946	0.03097 )	( 46524	CH	10MY1946	0.02681 )	( 46923	CH	22NC1946	C.71032 )
( 46920	CH	20DE1946	0.24032 )	( 46905	CH	JA1947	0.10173 )	( 46909	CH	MR1947	0.17303 )
( 46912	CH	AP1947	0.01150 )	( 46516	CH	4MY1947	C.00441 )	( 46906	CH	MY1947	C.01858 )
( 46919	CH	5JN1947	0.01062 )	( 46907	CH	JL1947	0.10651 )	( 46913	CH	6AU1947	C.05230 )
( 46922	CH	21AU1947	2.58315 )	( 46758	EV	5JN1937	C.00357 )	( 46771	EV	11JN1937	C.01426 )
( 46743	EV	20JN1937	0.00856 )	( 46770	EV	9JL1937	0.01193 )	( 46764	EV	17JL1937	C.01612 )
( 46757	EV	25JL1937	0.06259 )	( 46747	EV	1AU1937	0.07674 )	( 46763	EV	23AU1937	C.36526 )
( 46765	EV	30AU1937	0.93698 )	( 46769	EV	7SE1937	1.34607 )	( 46752	EV	15SE1937	1.61080 )
( 46760	EV	22SE1937	2.48166 )	( 46750	EV	24SE1937	0.29222 )	( 46744	EV	6OC1937	C.12193 )
( 46748	EV	13OC1937	0.17079 )	( 46767	EV	27CC1937	0.05802 )	( 46749	EV	12MR1938	C.03641 )
( 46768	EV	16MR1938	0.02940 )	( 46762	EV	18MR1938	C.30878 )	( 46756	EV	27AP1938	0.01007 )
( 46755	EV	19MY1938	0.01013 )	( 46761	EV	27MY1938	0.00273 )	( 46766	EV	14DE1938	C.03169 )
( 1223.	B 3	18MY1964	0.00156 )	( 1225	C 6	15MY1964	0.00392 )	( 1226	C 7	16MY1964	C.00381 )
( 1227	C* 2	13MY1964	0.00219 )	( 1228	D 2	14MY1964	C.00584 )	( 1229	D 5	14MY1964	0.01480 )
( 1230	E 2	16MY1964	0.00593 )	( 1231	E 3	16MY1964	0.00978 )	( 1232	E 5	16MY1964	C.04348 )
( 1233	B 3	5JN2964	0.00714 )	( 1439	B 6	5JN1964	C.00200 )	( 1236	C* 1	8JN1964	0.00350 )
( 1237	C* 2	8JN1964	0.00258 )	( 1238	D 3	11JN1964	C.01600 )	( 1239	D 4	11JN1964	C.00116 )
( 1240	D 6	10JN1964	0.00460 )	( 1242	E 3	13JN1964	C.00150 )	( 1243	E 6	13JN1964	C.01462 )
( 1244	F 1	11JN1964	0.00548 )	( 1245	F 2	11JN1964	C.00692 )	( 1246	F 3	11JN1964	0.04781 )
( 1247	B 3	14JL1964	C.19209 )	( 1248	B 3	24JL1964	2.06905 )	( 1440	B 6	11JL1964	C.05528 )
( 1441	B 6	24JL1964	0.30838 )	( 1249	C 3	8JL1964	0.00815 )	( 1250	C 6	10JL1964	0.14388 )
( 1251	C 7	16JL1964	0.09271 )	( 1252	C* 1	16JL1964	0.01674 )	( 1253	C* 2	16JL1964	C.23279 )
( 1254	D 2	15JL1964	0.01532 )	( 1255	D 5	15JL1964	0.17966 )	( 1256	E 2	14JL1964	C.01466 )
( 1257	E 3	14JL1964	0.02153 )	( 1258	F 1	6JL1964	0.12507 )	( 1259	F 2	6JL1964	C.15493 )
( 1260	F 3	6JL1964	0.13370 )	( 1261	B 3	2AU1964	0.75555 )	( 1262	B 3	17AU1964	1.10248 )
( 1442	B 6	2AU1964	0.12282 )	( 1443	B 6	16AU1964	C.46258 )	( 1263	C 7	15AU1964	1.54123 )
( 1264	C* 1	10AU1964	0.81094 )	( 1265	C* 2	10AU1964	C.31297 )	( 1266	D 3	18AU1964	1.06637 )
( 1267	D 6	18AU1964	0.15132 )	( 1268	E 2	15AU1964	1.43615 )	( 1269	E 3	15AU1964	1.15113 )
( 1270	F 1	10AU1964	5.33696 )	( 1444	B 6	19SE1964	2.97069 )	( 1271	C 7	22SE1964	0.20892 )
( 1272	C* 1	10SE1964	0.57464 )	( 1273	C* 2	10SE1964	0.60218 )	( 1274	D 1	17SE1964	C.47858 )
( 1275	D 2	17SE1964	0.90317 )	( 1276	D 3	18SE1964	0.32409 )	( 1277	D 4	18SE1964	1.38803 )
( 1278	D 6	18SE1964	0.08455 )	( 1279	E 1	16SE1964	0.20419 )	( 1280	E 2	16SE1964	C.24508 )

( 1281	E 3	165E1964	0.29039 )	( 1282	E 4	165E1964	0.55402 )	( 1283	E 5	165E1964	2.78901 )
( 1284	E 6	175E1964	0.81340 )	( 1285	F 1	155E1964	3.05748 )	( 1286	F 2	155E1964	1.53240 )
( 1287	F 3	155E1964	2.27682 )	( 1288	B 3	150C1964	C.01088 )	( 1445	B 6	140C1964	C.74364 )
( 1289	C 7	140C1964	0.12313 )	( 1290	C* 1	160C1964	0.23877 )	( 1291	C* 2	160C1964	C.04403 )
( 1292	D 1	150C1964	0.30933 )	( 1293	D 2	150C1964	C.08490 )	( 1294	D 3	150C1964	C.57685 )
( 1295	D 4	150C1964	1.04055 )	( 1296	D 5	140C1964	0.68852 )	( 1297	D 6	140C1964	C.02475 )
( 1298	E 1	120C1964	0.05924 )	( 1299	E 2	120C1964	0.24191 )	( 1300	E 3	130C1964	C.62645 )
( 1301	E 4	130C1964	0.30911 )	( 1302	E 5	130C1964	2.55081 )	( 1303	E 6	130C1964	C.29106 )
( 1304	F 1	110C1964	0.11113 )	( 1305	F 2	110C1964	0.04658 )	( 1306	F 3	110C1964	C.10533 )
( 1307	B 6	NO1964	0.15514 )	( 1308	C 7	8NO1964	0.02737 )	( 1309	C* 1	10NO1964	C.1C130 )
( 1310	C* 2	10NO1964	0.29252 )	( 1311	D 1	8NO1964	C.10577 )	( 1313	D 3	9NO1964	0.08687 )
( 1314	D 4	9NO1964	0.10048 )	( 1315	D 5	9NO1964	0.02730 )	( 1316	D 6	9NO1964	C.0C378 )
( 1317	E 1	6NO1964	C.20675 )	( 1318	E 2	7NO1964	0.13317 )	( 1319	E 3	7NO1964	C.2C161 )
( 1320	E 4	7NO1964	0.08687 )	( 1321	E 5	7NO1964	0.03511 )	( 1322	E 6	7NO1964	0.00667 )
( 1323	F 1	6NO1964	0.08223 )	( 1324	F 2	6NO1964	0.13975 )	( 1325	F 3	6NO1964	C.0C756 )
( 1336	C 3	27JA1967	0.00578 )	( 1337	C 3	2MR1967	0.02205 )	( 1338	C 3	2MR1967	C.01454 )
( 1339	C 5	28MR1967	0.02182 )	( 1340	C 7	28MR1967	C.00145 )	( 1341	A 3	19AP1967	C.01193 )
( 1342	A 4	19AP1967	0.06136 )	( 1343	A 6	19AP1967	0.00208 )	( 1344	C 3	25AP1967	C.00165 )
( 1345	C 5	25AP1967	0.01559 )	( 1346	C 7	21AP1967	0.00267 )	( 1347	E 2	23AP1967	C.0C325 )
( 1348	E 5	23AP1967	0.00685 )	( 1368	A 3	4MY1967	0.00628 )	( 1370	A 6	3MY1967	0.01611 )
( 1371	C 3	4MY1967	0.00231 )	( 1372	C 5	5MY1967	0.00355 )	( 1373	C 7	5MY1967	C.01426 )
( 1374	E 2	7MY1967	0.00295 )	( 1375	E 3	7MY1967	0.00722 )	( 1376	E 5	6MY1967	0.00562 )
( 1408	A 3	23MY1967	0.00447 )	( 1410	A 6	24MY1967	C.01128 )	( 1411	C 3	31MY1967	C.05334 )
( 1412	C 5	31MY1967	0.00842 )	( 1413	C 7	25MY1967	0.00632 )	( 1431	A 3	12JN1967	C.0C515 )
( 1432	A 4	13JN1967	0.00766 )	( 1433	C 3	17JN1967	C.02584 )	( 1434	C 5	17JN1967	C.0C598 )
( 1436	E 2	15JN1967	0.00724 )	( 1446	A 3	11JL1967	0.01223 )	( 1447	A 4	11JL1967	C.00468 )
( 1449	C 3	16JL1967	0.20253 )	( 1450	C 5	16JL1967	0.08569 )	( 1451	C 7	16JL1967	C.0C197 )
( 1452	E 2	14JL1967	0.00213 )	( 1453	E 3	15JL1967	0.01769 )	( 1454	E 5	15JL1967	C.04001 )
( 1504	A 3	28AU1967	2.07382 )	( 1505	A 4	28AU1967	1.80357 )	( 1506	A 6	29AU1967	0.07846 )
( 1508	C 3	25E1967	0.27975 )	( 1509	C 5	25E1967	3.53286 )	( 1510	C 7	29AU1967	C.48688 )
( 1511	E 2	15E1967	2.14876 )	( 1512	E 3	15E1967	C.82456 )	( 1513	E 5	31AU1967	1.29725 )
( 1532	A 3	18SE1967	0.04599 )	( 1533	A 4	19SE1967	0.15783 )	( 1534	A 6	19SE1967	C.15512 )
( 1535	C 7	20SE1967	0.17060 )	( 1536	E 2	24SE1967	C.41992 )	( 1537	E 3	24SE1967	9.66100 )
( 1538	E 5	23SE1967	1.41413 )	( 1539	C 3	40C1967	0.20630 )	( 1540	C 5	40C1967	3.82191 )
( 1541	E 2	110C1967	0.74504 )	( 1542	E 3	110C1967	12.10334 )	( 1543	E 5	100C1967	C.54776 )
( 1377	GS 1	9MY1967	0.00792 )	( 1378	GS 2	9MY1967	C.0C421 )	( 1379	GS 3	9MY1967	C.04642 )
( 1380	GS 4	9MY1967	C.01009 )	( 1381	GS 5	10MY1967	0.01193 )	( 1382	GS 6	10MY1967	C.01943 )
( 1383	GS 7	10MY1967	0.03743 )	( 1384	GS 8	10MY1967	0.05731 )	( 1385	GS 9	10MY1967	C.04709 )
( 1386	GS10	12MY1967	0.08044 )	( 1387	GS11	12MY1967	1.06543 )	( 1388	GS12	12MY1967	6.16591 )
( 1389	GS13	12MY1967	0.84057 )	( 1390	GS14	12MY1967	1.00411 )	( 1391	GS15	12MY1967	1.17320 )
( 1392	GS16	12MY1967	0.67803 )	( 1393	GS17	13MY1967	1.24644 )	( 1394	GS18	13MY1967	C.52293 )
( 1395	GS19	13MY1967	0.12683 )	( 1396	GS20	13MY1967	0.04143 )	( 1397	GS21	13MY1967	C.01177 )
( 1398	GS22	14MY1967	0.02732 )	( 1554	GS 1	30C1967	0.16011 )	( 1555	GS 2	30C1967	2.96610 )
( 1556	GS 3	30C1967	5.84032 )	( 1557	GS 4	30C1967	3.13901 )	( 1558	GS 5	40C1967	8.04661 )
( 1559	GS 7	40C1967	4.16171 )	( 1560	GS 8	40C1967	13.88561 )	( 1561	GS 9	40C1967	5.34132 )
( 1562	GS10	50C1967	2.59042 )	( 1563	GS11	50C1967	1.80050 )	( 1564	GS12	50C1967	C.39338 )
( 1565	GS13	50C1967	0.21296 )	( 1566	GS14	50C1967	0.28068 )	( 1567	GS15	50C1967	3.11190 )
( 1568	GS16	50C1967	0.67243 )	( 1569	GS17	50C1967	4.16214 )	( 1570	GS18	50C1967	C.17668 )
( 1571	GS19	60C1967	0.02400 )	( 1572	GS20	60C1967	0.00631 )	( 1573	GS21	60C1967	C.19150 )
( 1574	GS22	60C1967	0.34229 )	( 1575	GS28	60C1967	0.18063 )	( 1544	MU 1	20C1967	C.02621 )
( 1547	MS 1	20C1967	0.19960 )	( 1524	MI 1	20SE1967	0.08757 )	( 1546	LU 1	20C1967	C.1C004 )
( 1520	HO 1	18SE1967	0.20274 )	( 1521	SH 1	18SE1967	C.05193 )	( 1523	RA 1	19SE1967	0.04613 )
( 1525	PW 1	20SE1967	0.06963 )	( 1526	MO 1	20SE1967	0.15930 )	( 1527	TR 1	20SE1967	C.07547 )
( 1528	SB 1	20SE1967	3.92723 )	( 1529	KW 1	20SE1967	1.00731 )	( 1530	FR 1	24SE1967	C.22002 )
( 1531	GH 1	25SE1967	0.01691 )	( 1545	WL 1	20C1967	C.79735 )	( 1548	CA 1	30C1967	1.50108 )
( 1549	MQ 1	40C1967	2.08305 )	( 1551	ES 1	50C1967	5.36784 )	( 1552	SM 1	60C1967	C.41598 )
( 1550	MR 1	50C1967	0.28497 )	( 1553	SG 1	60C1967	1.99765 )	( 1428	MU 2	29MY1967	C.01507 )
( 1426	MS 2	29MY1967	0.01050 )	( 1351	MI 2	21AP1967	C.01552 )	( 1427	LU 2	29MY1967	C.26634 )
( 1417	HO 2	22MY1967	0.01122 )	( 1418	SH 2	22MY1967	0.03110 )	( 1350	BH 2	19AP1967	C.00441 )
( 1425	RA 2	25MY1967	0.01768 )	( 1399	PW 2	5MY1967	0.00680 )	( 1401	MC 2	6MY1967	C.02352 )
( 1402	TR 2	6MY1967	0.01624 )	( 1400	SB 2	6MY1967	0.02978 )	( 1352	KW 2	21AP1967	C.06872 )
( 1353	FR 2	23AP1967	0.01055 )	( 1354	GH 2	25AP1967	0.00173 )	( 1429	WL 2	29MY1967	C.04247 )
( 1403	CA 2	10MY1967	0.28769 )	( 1404	MQ 2	10MY1967	0.17785 )	( 1405	ES 2	12MY1967	C.40635 )
( 1407	SM 2	14MY1967	0.07165 )	( 1349	CI 2	19AP1967	0.00359 )	( 1419	BU 2	23MY1967	C.12816 )
( 1420	IH 2	23MY1967	0.03021 )	( 1421	CH 2	23MY1967	0.15614 )	( 1422	GA 2	23MY1967	C.02555 )
( 1423	WA 2	25MY1967	0.02565 )	( 1424	KN 2	25MY1967	0.02665 )	(			

118 CYCMTVB ICT NO OF STATIONS 107

(60973	CH	1876	0.73217 )	( 3540	CH	11MY1879	0.00466 )	( 3541	CH	1FE1881	0.17607 )
(46921	CH	23NO1945	0.00065 )	(46517	CH	12JA1946	0.00083 )	(46914	CH	19AP1946	C.0C107 )
(46923	CH	22NO1946	0.1C528 )	(46520	CH	20DE1946	0.04344 )	(46905	CH	JA1947	C.01348 )
(46906	CH	MY1947	0.00066 )	(46507	CH	JL1947	C.00099 )	(46922	CH	21AU1947	C.02617 )
(46745	EV	3JL1937	C.02090 )	(46747	EV	1AU1937	0.00495 )	(46763	EV	23AU1937	C.1C146 )
(46765	EV	30AU1937	0.07250 )	(46769	EV	7SE1937	0.06513 )	(46752	EV	15SE1937	C.13061 )
(46760	EV	22SE1937	0.39391 )	(46750	EV	24SE1937	C.03299 )	(46744	EV	60C1937	C.01463 )
(46748	EV	130C1937	0.02135 )	(46767	EV	270C1937	C.00774 )	(46768	EV	16MR1938	0.01470 )
(46762	EV	18MR1938	0.04411 )	(46772	EV	18AP1938	0.00710 )	(46756	EV	27AP1938	C.0C168 )
( 1244	F 1	11JN1964	0.0C110 )	( 1246	F 3	11JN1964	C.00598 )	( 1247	B 3	14JL1964	C.02134 )
( 1248	B 3	24JL1964	0.01773 )	( 1440	B 6	11JL1964	C.00737 )	( 1441	B 6	24JL1964	C.0C220 )
( 1252	C* 1	16JL1964	0.00279 )	( 1253	C* 2	16JL1964	C.00228 )	( 1255	D 5	15JL1964	C.00070 )
( 1256	E 2	14JL1964	0.00183 )	( 1258	F 1	6JL1964	0.00944 )	( 1260	F 3	6JL1964	C.01719 )
( 1262	B 3	17AU1964	0.01260 )	( 1442	B 6	2AU1964	0.00341 )	( 1263	C 7	15AU1964	C.01201 )
( 1264	C* 1	10AU1964	0.00772 )	( 1265	C* 2	10AU1964	0.00894 )	( 1266	D 3	18AU1964	0.02105 )
( 1268	E 2	15AU1964	0.00821 )	( 1269	E 3	15AU1964	0.03563 )	( 1270	F 1	10AU1964	C.03812 )
( 1444	B 6	19SE1964	0.00606 )	( 1272	C* 1	10SE1964	C.01642 )	( 1274	D 1	17SE1964	0.0C469 )
( 1275	D 2	17SE1964	0.00645 )	( 1277	D 4	18SE1964	C.03098 )	( 1278	D 6	18SE1964	C.00384 )
( 1279	E 1	16SE1964	0.0C393 )	( 1281	E 3	16SE1964	0.01570 )	( 1283	E 5	16SE1964	C.03065 )
( 1284	E 6	17SE1964	0.00318 )	( 1285	F 1	15SE1964	0.01165 )	( 1287	F 3	15SE1964	C.01001 )
( 1445	B 6	140C1964	0.02935 )	( 1289	C 7	14CC1964	C.00440 )	( 1293	D 2	150C1964	C.0C472 )
( 1294	D 3	150C1964	0.00330 )	( 1295	D 4	150C1964	0.01784 )	( 1296	D 5	140C1964	C.0C180 )
( 1297	D 6	140C1964	0.00190 )	( 1298	E 1	120C1964	0.00808 )	( 1299	E 2	120C1964	C.0C314 )
( 1300	E 3	130C1964	0.00716 )	( 1301	E 4	130C1964	0.00883 )	( 1302	E 5	130C1964	C.03644 )
( 1303	E 6	130C1964	0.00560 )	( 1305	F 2	110C1964	0.00173 )	( 1306	F 3	110C1964	C.0C554 )
( 1309	C* 1	10NO1964	0.00161 )	( 1311	D 1	8NO1964	0.00258 )	( 1320	E 4	7NO1964	0.00414 )
( 1322	E 6	7NO1964	0.00667 )	( 1323	F 1	6NO1964	C.00418 )	( 1324	F 2	6NO1964	C.0C699 )
( 1341	A 3	19AP1967	0.00434 )	( 1342	A 4	19AP1967	C.00180 )	( 1343	A 6	19AP1967	C.00069 )
( 1346	C 7	21AP1967	0.00134 )	( 1348	E 5	23AP1967	C.00137 )	( 1373	C 7	5MY1967	C.0C285 )
( 1431	A 3	12JN1967	0.0C257 )	( 1435	C 7	13JN1967	0.00316 )	( 1449	C 3	16JL1967	C.1C146 )
( 1450	C 5	16JL1967	0.0C381 )	( 1451	C 7	16JL1967	0.00197 )	( 1454	E 5	15JL1967	C.0C400 )
( 1504	A 3	28AU1967	0.01481 )	( 1505	A 4	28AU1967	C.03092 )	( 1509	C 5	2SE1967	C.07C66 )
( 1510	C 7	29AU1967	0.01265 )	( 1511	E 2	1SE1967	0.04604 )	( 1512	E 3	1SE1967	C.02356 )
( 1513	E 5	31AU1967	0.01520 )	( 1536	E 2	24SE1967	0.00545 )	( 1537	E 3	24SE1967	C.17683 )
( 1538	E 5	23SE1967	0.01657 )	( 1540	C 5	40C1967	0.00993 )	( 1541	E 2	110C1967	C.02129 )
( 1542	E 3	110C1967	0.16273 )	( 1543	E 5	100C1967	0.02155 )	(			

*Cyclotella cryptica* Reimann, Lewin and Guillard

*Cyclotella cryptica* Reimann, Lewin and Guillard, Phycologia, 3:82, figs. 4-6. 1963.

Cells cylindrical with slightly concentrically undulate, nearly flat, valves. Cells always occur singly. Specimens from Lake Michigan 8-16 $\mu$  in diameter. Ornamentation of the marginal zone consists of rather broad, chambered, striae, without substructure visible under the light microscope, separated by radiate costae. Striae and costae about 6-9 in 10 $\mu$  at the margin of the valves. A rather inconspicuous spine occurs at the marginal end of each of the costae. The chambers of the costae grade into the surface of the central area so that the central area has no well defined border. The striae are also somewhat variable in length, especially in the larger individuals. The only visible ornamentation of the central area is one or more (usually less than 5) distinct puncta. These puncta are somewhat random in arrangement, but are never central and are most often confined to one side of the central area.

This species resembles *C. meneghiniana* and several of its described varieties. Evidence begins to accumulate that entities described as *C. meneghiniana* include a number of species of superficially similar morphology that are difficult to distinguish under the light microscope.

According to our evidence *C. cryptica* is quite rare in the Lake Michigan flora and the majority of our records come from harbors and from inshore areas subject to appreciable chloride contamination. Its distribution in this respect is quite similar to that of *C. meneghiniana* and some of its described varieties. With adequate optical equipment, determination of the two entities is not especially difficult but care must be taken and previous records, especially those derived from observations of living material, should be treated with caution.

115 CYCRYPTI TOT NO OF STATIONS 18											
( 1269	E 3	15AU1964	0.00274 )	( 1273	C 2	10SE1964	0.00538 )	( 1274	D 1	17SE1964	C.00469 )
( 1282	E 4	16SE1964	0.01108 )	( 1284	E 6	17SE1964	0.00318 )	( 1348	E 5	23AP1967	0.00137 )
( 1451	C 7	16JL1967	C.00394 )	( 1452	E 2	14JL1967	0.01490 )	( 1504	A 3	28AU1967	C.00741 )
( 1533	A 4	19SE1967	0.03714 )	( 1534	A 6	19SE1967	0.00310 )	( 1536	E 2	24SE1967	C.07362 )
( 1537	E 3	24SE1967	0.03450 )	( 1538	E 5	23SE1967	C.00552 )	( 1541	E 2	11CC1967	C.20755 )
( 1542	E 3	11CC1967	0.07628 )	( 1543	E 5	10CC1967	0.03591 )	( 1575	ES28	60CC1967	C.00129 )

*Cyclotella kuetzingiana* Thwaites

*Cyclotella kuetzingiana* Thwaites, Ann. Mag. Nat. Hist., ser. 2, 1:169. 1848.

Cells cylindrical with slightly excentrically undulate valves. Specimens from Lake Michigan 7-32 $\mu$  in diameter, always occurring singly. Marginal zone somewhat variable in width, about one-quarter--one-half the radius of the valve. Ornamentation of the marginal zone composed of non-punctate striae, 12-14 in 10 $\mu$  at the margin of the valve. The striae are of variable length, especially in the smaller individuals. In the larger individuals the inner border of the marginal zone is regular due to the

fact that the longer striae are all of approximately the same length. In the smaller individuals the border between the two zones appears less regular due to the fewer number of striae present. The ornamentation of the central area is highly variable in this taxon. A number of distinct puncta are present in all individuals. These may be of larger or smaller size and may be either randomly arranged or disposed radially. Other structures such as chambers or thickenings of the valve surface are lacking.

A number of varieties of this species have been described on the basis of the various patterns of ornamentation of the central area. Individual specimens can be found in the collections from Lake Michigan that are identical to nearly all of these. When populations are considered, these variations grade into one another so completely that no such distinctions can be made.

120 CYKUTZIN TCT NC CF STATIONS 135

( 3540	CH	11MY1879	0.00932 )	( 3541	CH	1FE1881	0.06847 )	( 35C7	CH	19FE1881	C.01132 )
( 46905	CH	JA1947	0.00123 )	( 465C7	CH	JL1947	C.00099 )	( 46922	CH	21AU1947	C.00048 )
( 46747	EV	1AU1937	0.00248 )	( 46744	EV	60C1937	C.00488 )	( 1232	E 5	16MY1964	C.00174 )
( 1440	B 6	11JL1964	0.00365 )	( 1441	B 6	24JL1964	0.01762 )	( 1253	C* 2	16JL1964	C.00228 )
( 1259	F 2	6JL1964	0.00310 )	( 1260	F 3	6JL1964	C.00191 )	( 1264	C* 1	10AU1964	C.00193 )
( 1265	C* 2	10AU1964	0.00894 )	( 1266	D 3	18AU1964	C.22099 )	( 1268	E 2	15AU1964	C.00274 )
( 1270	F 1	10AU1964	0.00817 )	( 1272	C* 1	10SE1964	0.03694 )	( 1279	E 1	16SE1964	C.00393 )
( 1280	E 2	16SE1964	0.01362 )	( 1281	E 3	16SE1964	0.01570 )	( 1282	E 4	16SE1964	C.04432 )
( 1283	E 5	16SE1964	0.03065 )	( 1284	E 6	17SE1964	0.04766 )	( 1285	F 1	15SE1964	0.01165 )
( 1292	D 1	15CC1964	0.00745 )	( 1293	D 2	15CC1964	0.00472 )	( 1294	D 3	15CC1964	C.00659 )
( 1295	D 4	15CC1964	0.03568 )	( 1296	D 5	14CC1964	0.00393 )	( 1298	E 1	12CC1964	0.00539 )
( 1299	E 2	12CC1964	0.00628 )	( 1300	E 3	13CC1964	0.02148 )	( 1301	E 4	13CC1964	C.03091 )
( 1302	E 5	13CC1964	0.03235 )	( 1303	E 6	13CC1964	0.01679 )	( 1306	F 3	11CC1964	C.00832 )
( 1307	B 6	NC1964	0.00361 )	( 1309	C* 1	10NO1964	C.00643 )	( 1317	E 1	6NC1964	C.00191 )
( 1319	E 3	7NO1964	0.01833 )	( 1320	E 4	7NO1964	C.00620 )	( 1321	E 5	7NO1964	C.00638 )
( 1322	E 6	7NO1964	0.00333 )	( 1339	C 5	28MR1967	C.00312 )	( 1340	C 7	28MR1967	C.00073 )
( 1345	C 5	25AP1967	0.00585 )	( 1346	C 7	21AP1967	C.00401 )	( 1375	E 3	7MY1967	C.00241 )
( 1376	E 5	6MY1967	0.00562 )	( 1410	A 6	24MY1967	0.00564 )	( 1449	C 3	16JL1967	C.02293 )
( 1504	A 3	28AU1967	0.00247 )	( 1509	C 5	2SE1967	C.01009 )	( 1510	C 7	29AU1967	C.00632 )
( 1511	E 2	1SE1967	0.53719 )	( 1512	E 3	1SE1967	1.37427 )	( 1513	E 5	31AU1967	1.77359 )
( 1532	A 3	18SE1967	0.00329 )	( 1533	A 4	19SE1967	0.00464 )	( 1534	A 6	19SE1967	C.00931 )
( 1535	C 7	20SE1967	0.00322 )	( 1536	E 2	24SE1967	0.11452 )	( 1537	E 3	24SE1967	5.73622 )
( 1538	E 5	23SE1967	0.59659 )	( 1539	C 3	4CC1967	C.02013 )	( 1540	C 5	4CC1967	C.20350 )
( 1541	E 2	11CC1967	0.40977 )	( 1542	E 3	11CC1967	12.81530 )	( 1543	E 5	10CC1967	1.10616 )
( 1379	GS 3	9MY1967	0.00309 )	( 1380	GS 4	9MY1967	0.00168 )	( 1381	GS 5	10MY1967	C.00239 )
( 1382	GS 6	10MY1967	0.00278 )	( 1383	GS 7	10MY1967	0.01871 )	( 1384	GS 8	10MY1967	C.01479 )
( 1387	GS11	12MY1967	0.10694 )	( 1388	GS12	12MY1967	0.56712 )	( 1389	GS13	12MY1967	0.10056 )
( 1390	GS14	12MY1967	0.05285 )	( 1391	GS15	12MY1967	0.01915 )	( 1392	GS16	12MY1967	0.05548 )
( 1393	GS17	13MY1967	0.02192 )	( 1394	GS18	13MY1967	C.03096 )	( 1395	GS19	13MY1967	C.00822 )
( 1396	GS20	13MY1967	0.00222 )	( 1398	GS22	14MY1967	0.00607 )	( 1554	GS 1	30C1967	C.31310 )
( 1555	GS 2	30C1967	0.74153 )	( 1556	GS 3	30C1967	C.49017 )	( 1557	GS 4	30C1967	C.32885 )
( 1558	GS 5	40C1967	0.61440 )	( 1559	GS 7	40C1967	0.35672 )	( 1560	GS 8	40C1967	1.20909 )
( 1561	GS 9	40C1967	1.17391 )	( 1562	GS1C	5CC1967	1.55425 )	( 1563	GS11	50C1967	C.59627 )
( 1564	GS12	50C1967	0.38515 )	( 1565	GS13	50C1967	0.64395 )	( 1566	GS14	50C1967	0.42928 )
( 1567	GS15	50C1967	0.73987 )	( 1568	GS16	50C1967	0.13564 )	( 1569	GS17	50C1967	C.38054 )
( 1570	GS18	50C1967	0.93217 )	( 1571	GS19	60C1967	C.00351 )	( 1573	GS21	60C1967	C.01680 )
( 1574	GS22	60C1967	0.11218 )	( 1575	GS28	60C1967	0.01032 )	( 1547	MS 1	20C1967	0.00798 )
( 1520	HO 1	18SE1967	0.00943 )	( 1522	BH 1	18SE1967	0.00182 )	( 1523	RA 1	19SE1967	C.00923 )
( 1526	MO 1	20SE1967	0.06827 )	( 1527	TR 1	20SE1967	0.01258 )	( 1528	SB 1	20SE1967	1.57378 )
( 1529	KW 1	20SE1967	0.25183 )	( 1530	FR 1	24SE1967	C.02000 )	( 1531	GH 1	25SE1967	C.00845 )
( 1548	CA 1	30C1967	0.36891 )	( 1549	MR 1	40C1967	0.21927 )	( 1551	ES 1	50C1967	3.96198 )
( 1552	SM 1	60C1967	0.01981 )	( 1550	HQ 1	50C1967	C.16107 )	( 1553	SG 1	60C1967	C.31580 )
( 1428	MU 2	29MY1967	0.00301 )	( 1427	LU 2	29MY1967	0.01211 )	( 1399	PW 2	5MY1967	C.00680 )
( 1401	MO 2	6MY1967	0.00588 )	( 1402	TR 2	6MY1967	C.01083 )	( 1400	SB 2	6MY1967	C.00596 )
( 1352	KW 2	21AP1967	0.00859 )	( 1405	ES 2	12MY1967	C.07095 )	( 1407	SM 2	14MY1967	C.03583 )

*Cyclotella meneghiniana* Kütz.

*Cyclotella meneghiniana* Kützing, Bacill., p. 50, pl. 30, fig. 68. 1844.

Cells cylindrical with strongly excentrically undulate valves. Cells usually occur singly. Specimens from Lake Michigan 7-30μ in diameter. Ornamentation of the marginal zone consists of broad, chambered striae separated by radiate costae. Striae and costae 6-9 (usually 7 or 8) in 10μ at the margin of the valve. The striae are all of equal length and have no substructure visible under the light microscope. The width of the marginal

zone is about one-half the radius of the valve. The border between the two zones of the valve surface is very well marked and regular. The ornamentation of the central area consists of very fine and indistinct radiating striae occasionally with one or more larger isolated puncta. In some specimens the central area has no visible structure.

As noted in the discussion of *C. cryptica*, the reports of this species probably include several taxa of similar morphology. In Lake Michigan the nominate variety of *C. meneghiniana* is much rarer than *C. meneghiniana* var. *plana* described below. Our limited observations indicate that differences between these two taxa are great enough so that further study may prove them to be separate species. Final determination of the status of the numerous described taxa that are included in *C. meneghiniana* by most authorities awaits the patient research of the monographer.

123 CYMENEH TCT NO OF STATICS 52

( 3540	CH	11MY1879	0.00466 )	( 3507	CH	19FE1881	0.01132 )	( 46920	CH	20DE1946	C.00031 )
( 46905	CH	JA1947	0.00368 )	( 46516	CH	4MY1547	C.00034 )	( 46922	CH	21AU1947	C.00145 )
( 1226	C 7	16MY1964	C.00761 )	( 1252	C* 1	16JL1964	0.00279 )	( 1264	C* 1	10AU1964	C.00565 )
( 1266	D 3	18AU1964	1.35050 )	( 1271	C 7	22SE1964	C.00653 )	( 1272	C* 1	10SE1964	0.06157 )
( 1274	D 1	17SE1964	0.00469 )	( 1276	D 3	18SE1964	0.01118 )	( 1279	E 1	16SE1964	C.00393 )
( 1280	E 2	16SE1964	0.00681 )	( 1286	F 2	15SE1964	0.03234 )	( 1287	F 3	15SE1964	0.00500 )
( 1306	F 3	11CC1964	0.00554 )	( 1311	D 1	8NO1964	0.00774 )	( 1315	D 5	9NO1964	0.00455 )
( 1316	D 6	9NO1964	0.00378 )	( 1320	E 4	7NG1964	C.00207 )	( 1323	F 1	6NO1964	0.00139 )
( 1324	F 2	6NO1964	0.00232 )	( 1341	A 3	19AP1967	0.00542 )	( 1342	A 4	19AP1967	C.00541 )
( 1343	A 6	19AP1967	0.00069 )	( 1348	E 5	23AP1967	C.00137 )	( 1370	A 6	3MY1967	0.00230 )
( 1409	A 4	23MY1967	0.00298 )	( 1411	C 3	31MY1967	0.00410 )	( 1416	E 5	28MY1967	C.01749 )
( 1431	A 3	12JN1967	0.00515 )	( 1432	A 4	13JN1967	0.00255 )	( 1434	C 5	17JN1967	C.00299 )
( 1448	A 6	10JL1967	0.00354 )	( 1450	C 5	16JL1967	0.00381 )	( 1451	C 7	16JL1967	C.00197 )
( 1508	C 3	2SE1967	0.00400 )	( 1511	E 2	1SE1967	0.00921 )	( 1532	A 3	18SE1967	C.01971 )
( 1533	A 4	19SE1967	0.00464 )	( 1534	A 6	19SE1967	C.00620 )	( 1535	C 7	20SE1967	C.00966 )
( 1537	E 3	24SE1967	0.01294 )	( 1538	E 5	23SE1967	0.03867 )	( 1539	C 3	40C1967	C.00503 )
( 1540	C 5	40C1967	0.00496 )	( 1541	E 2	11CC1967	0.07983 )	( 1542	E 3	11CC1967	C.02560 )
( 1543	E 5	10CC1967	0.05746 )								

### *Cyclotella meneghiniana* var. *plana* Fricke

*Cyclotella meneghiniana* var. *plana* Fricke, A. Schmidt's Atlas Diat., pl. 222, fig. 32. 1900.

Cells cylindrical with slightly concentrically undulate, nearly flat, valves. Cells occur singly. Specimens from Lake Michigan 8-38 $\mu$  in diameter. Ornamentation of the marginal zone consists of rather broad chambered striae separated by rather wide and only slightly thickened radial ribs. Radial striae and costae 7-9 in 10 $\mu$ , all of the same length, forming a smooth border with the central area. The striae and costae occupy about one-half the radius of the valve. At the distal end of each of the costae there is a more or less conspicuous spine. The ornamentation of the central area consists of very fine and indistinct striae that radiate about a central point. In addition one or more large distinct, isolated puncta usually occur on one side of the central area about equidistant between the center of the valve and the outer margin of the central area.

As noted above, this taxon could be afforded specific status on the basis of our observations from Lake Michigan because of its constant unique morphology and distribution pattern. We, however, choose to retain the established usage until more evidence is available from other habitats.

124 CYMENEFP TCT NO OF STATICS 163

( 3540	CH	11MY1879	0.00466 )	( 46924	CH	10MY1946	0.00071 )	( 46922	CH	21AU1947	C.00145 )
( 46760	EV	22SE1937	0.00492 )	( 46744	EV	60C1937	0.00488 )	( 46767	EV	27OC1937	C.00387 )

( 1230	E 2	16MY1964	0.00296 )	( 1232	E 5	16MY1964	0.00348 )	( 1236	C* 1	8JA1964	0.1C327 )
( 1237	C* 2	8JN1964	0.01289 )	( 1239	D 4	11JN1964	0.00116 )	( 1240	D 6	10JN1964	0.00307 )
( 1243	E 6	13JN1964	0.00209 )	( 1248	E 3	24JL1964	0.00394 )	( 1253	C* 2	16JL1964	0.00228 )
( 1254	D 2	15JL1964	0.00192 )	( 1256	E 2	14JL1964	0.00366 )	( 1257	E 3	14JL1964	0.00239 )
( 1259	F 2	6JL1964	0.00310 )	( 1264	C* 1	10AU1964	0.01545 )	( 1265	C* 2	10AU1964	0.01118 )
( 1266	D 3	18AU1964	0.00351 )	( 1269	E 3	15AU1964	0.00822 )	( 1272	C* 1	10SE1964	0.44330 )
( 1273	C* 2	10SE1964	0.01613 )	( 1274	D 1	17SE1964	0.00938 )	( 1275	D 2	17SE1964	0.01935 )
( 1278	D 6	18SE1964	0.00769 )	( 1281	E 3	16SE1964	0.00785 )	( 1282	E 4	16SE1964	0.01108 )
( 1283	E 5	16SE1964	0.00613 )	( 1285	F 1	15SE1964	0.02912 )	( 1286	F 2	15SE1964	0.02189 )
( 1287	F 3	15SE1964	0.01001 )	( 1291	C* 2	16OC1964	0.00489 )	( 1294	D 3	15OC1964	0.00330 )
( 1298	E 1	12OC1964	0.00808 )	( 1299	E 2	12OC1964	0.00314 )	( 1300	E 3	13OC1964	0.00358 )
( 1301	E 4	13OC1964	0.00442 )	( 1303	E 6	13OC1964	0.00560 )	( 1304	F 1	11OC1964	0.00494 )
( 1305	F 2	11OC1964	0.00863 )	( 1311	D 1	8ND1964	0.00516 )	( 1313	D 3	9ND1964	0.00193 )
( 1316	D 6	9ND1964	0.00378 )	( 1317	E 1	6ND1964	0.00191 )	( 1318	E 2	7NC1964	0.00380 )
( 1321	E 5	7ND1964	0.00319 )	( 1341	A 3	19AP1967	0.03037 )	( 1342	A 4	19AP1967	0.00902 )
( 1343	A 6	19AP1967	0.00208 )	( 1346	C 7	21AP1967	0.00401 )	( 1369	A 4	4MY1967	0.01118 )
( 1370	A 6	3MY1967	0.00230 )	( 1371	C 3	4MY1967	0.00231 )	( 1374	E 2	7MY1967	0.00598 )
( 1376	E 5	6MY1967	0.00281 )	( 1409	A 4	23MY1967	0.00595 )	( 1411	C 3	31MY1967	0.00410 )
( 1416	E 5	28MY1967	0.00336 )	( 1432	A 4	13JN1967	0.00511 )	( 1446	A 3	11JL1967	0.00489 )
( 1447	A 4	11JL1967	0.00702 )	( 1448	A 6	10JL1967	0.01061 )	( 1449	C 3	16JL1967	0.00382 )
( 1451	C 7	16JL1967	0.00394 )	( 1452	E 2	14JL1967	0.01703 )	( 1453	E 3	15JL1967	0.01264 )
( 1454	E 5	15JL1967	0.00600 )	( 1504	A 3	28AU1967	0.19010 )	( 1505	A 4	28AU1967	0.00515 )
( 1508	C 3	25E1967	0.00400 )	( 1511	E 2	1SE1967	0.00307 )	( 1512	E 3	1SE1967	0.00785 )
( 1513	E 5	31AU1967	0.00507 )	( 1532	A 3	18SE1967	0.08870 )	( 1533	A 4	19SE1967	0.22282 )
( 1534	A 6	19SE1967	0.15512 )	( 1535	C 7	20SE1967	0.05472 )	( 1536	E 2	24SE1967	0.03545 )
( 1537	E 3	24SE1967	0.05607 )	( 1538	E 5	23SE1967	0.07181 )	( 1539	C 3	40C1967	0.01006 )
( 1540	C 5	40C1967	0.00496 )	( 1541	E 2	11OC1967	0.44170 )	( 1542	E 3	11OC1967	0.10679 )
( 1543	E 5	10OC1967	0.05746 )	( 1377	GS 1	9MY1967	0.00792 )	( 1381	GS 5	10MY1967	0.00477 )
( 1382	GS 6	10MY1967	0.00278 )	( 1388	GS12	12MY1967	0.02413 )	( 1389	GS13	12MY1967	0.00516 )
( 1390	GS14	12MY1967	0.01174 )	( 1391	GS15	12MY1967	0.00479 )	( 1392	GS16	12MY1967	0.00308 )
( 1394	GS18	13MY1967	0.00344 )	( 1356	GS20	13MY1967	0.00518 )	( 1397	GS21	13MY1967	0.00196 )
( 1398	GS22	14MY1967	0.00304 )	( 1554	GS 1	30C1967	0.26329 )	( 1555	GS 2	30C1967	0.59322 )
( 1556	GS 3	30C1967	0.86041 )	( 1557	GS 4	30C1967	0.45964 )	( 1558	GS 5	40C1967	0.43999 )
( 1559	GS 7	40C1967	0.83584 )	( 1560	GS 8	40C1967	0.53370 )	( 1561	GS 9	40C1967	0.19957 )
( 1562	GS10	50C1967	0.06661 )	( 1563	GS11	50C1967	0.11692 )	( 1564	GS12	50C1967	0.05382 )
( 1565	GS13	50C1967	0.28395 )	( 1566	GS14	50C1967	0.15410 )	( 1567	GS15	50C1967	0.22228 )
( 1568	GS16	50C1967	0.01876 )	( 1569	GS17	50C1967	0.16054 )	( 1571	GS19	60C1967	0.09074 )
( 1572	GS20	60C1967	0.01352 )	( 1573	GS21	60C1967	0.05040 )	( 1574	GS22	60C1967	0.07191 )
( 1575	GS28	60C1967	0.11354 )	( 1544	MU 1	20C1967	0.28117 )	( 1547	MS 1	20C1967	0.00782 )
( 1524	MI 1	20SE1967	0.13135 )	( 1546	LU 1	20C1967	0.09503 )	( 1520	HO 1	18SE1967	0.67424 )
( 1521	SH 1	18SE1967	0.05193 )	( 1522	BH 1	18SE1967	1.22536 )	( 1523	RA 1	19SE1967	0.36745 )
( 1525	PW 1	20SE1967	0.01393 )	( 1526	MO 1	20SE1967	0.04551 )	( 1527	TR 1	20SE1967	0.03774 )
( 1529	KW 1	20SE1967	0.05996 )	( 1530	FR 1	24SE1967	0.02000 )	( 1531	GH 1	25SE1967	23.53339 )
( 1545	WL 1	20C1967	0.07433 )	( 1548	CA 1	30C1967	0.03816 )	( 1549	MQ 1	40C1967	1.15116 )
( 1551	ES 1	50C1967	0.14378 )	( 1550	MR 1	50C1967	0.56994 )	( 1553	SG 1	60C1967	0.00734 )
( 1428	MU 2	25MY1967	0.22297 )	( 1426	MS 2	29MY1967	0.13648 )	( 1351	PI 2	21AP1967	0.00621 )
( 1427	LU 2	29MY1967	0.07264 )	( 1417	HO 2	22MY1967	0.59818 )	( 1418	SH 2	22MY1967	0.01555 )
( 1350	BH 2	15AP1967	1.05725 )	( 1425	RA 2	22MY1967	0.03536 )	( 1399	PW 2	5MY1967	0.02040 )
( 1401	MO 2	6MY1967	0.69379 )	( 1402	TR 2	6MY1967	0.23284 )	( 1400	SB 2	6MY1967	0.80415 )
( 1352	KW 2	21AP1967	0.00859 )	( 1353	FR 2	23AP1967	0.05274 )	( 1354	GH 2	25AP1967	0.07422 )
( 1429	WL 2	25MY1967	0.55208 )	( 1407	SM 2	14MY1967	0.00597 )	( 1406	GB 2	13MY1967	0.01617 )
( 1420	IH 2	23MY1967	0.03021 )	( 1421	CH 2	23MY1967	0.03470 )	( 1422	EA 2	23MY1967	0.03576 )
( 1423	WA 2	25MY1967	0.00856 )								

*Cyclotella michiganiana* Skv.

*Cyclotella michiganiana* Skvortzow, Amer. Midland Nat., 18:658, pl. 1, figs. 3, 10, 18. 1937.

Cells cylindrical with strongly ~~ex~~centrically undulate valves. Cells always occur singly. Specimens from Lake Michigan 5-22 $\mu$  in diameter. Width of marginal zone variable, usually about one-half the radius of the valve. Ornamentation of the marginal zone composed of radial striae of slightly irregular length and without visible substructure. Radial striae 14-18 in 10 $\mu$  at the margin of the valve. Central area of the valves strongly undulate, usually with a number of large, randomly arranged, puncta on the raised portion. The sunken portion of the central area may be without visible ornamentation or may have a few puncta similar to those on the raised portion.

This species is abundant in some collections from Lake Michigan. It apparently is cyclical in occurrence, being common or dominant in the plankton in some years and very rare or lacking in collections from the same area and season in other years. The taxonomic position of this entity is difficult to determine with certainty. Skvortzow (l.c.) has pointed out its affinities to *C. striata* (Kütz.) Grun. and *C. caspia* Grun. Both of these species find their primary habitat in brackish water and, although they resemble this species in general morphology, sufficient differences exist to separate them with little doubt.



## 125 CYMICHIG TCT AC OF STATIONS 267

( 60973 )	CH	1876	1.65328 )	( 3540	CH	11MY1879	0.02330 )	( 3541	CH	1FE1881	0.04891 )
( 3507 )	CH	19FE1881	0.01132 )	( 46510	CH	0C1945	0.07100 )	( 46921	CH	23NO1945	0.06596 )
( 46908 )	CH	0E1945	0.06042 )	( 46917 )	CH	12JA1946	0.23427 )	( 46915 )	CH	20FE1946	0.28453 )
( 46914 )	CH	19AP1946	0.01602 )	( 46924 )	CH	10MY1946	0.01834 )	( 46923 )	CH	22NO1946	0.39122 )
( 46920 )	CH	20DE1946	0.13033 )	( 46905 )	CH	JA1947	0.11398 )	( 46909 )	CH	MR1947	0.20946 )
( 46912 )	CH	AP1947	0.01150 )	( 46916 )	CH	4MY1947	0.00136 )	( 46906 )	CH	MY1947	0.00465 )
( 46919 )	CH	5JN1947	0.00607 )	( 46907 )	CH	JL1947	0.00444 )	( 46913 )	CH	6AU1947	0.01046 )
( 46922 )	CH	21AU1947	2.20513 )	( 46758 )	EV	5JN1937	0.00713 )	( 46764 )	EV	17JL1937	0.24980 )
( 46757 )	EV	25JL1937	0.22146 )	( 46763 )	EV	23AU1937	0.40584 )	( 46765 )	EV	30AU1937	0.20636 )
( 46769 )	EV	7SE1937	0.06513 )	( 46752 )	EV	15SE1937	0.10884 )	( 46760 )	EV	22SE1937	0.13787 )
( 46750 )	EV	24SE1937	0.44304 )	( 46744 )	EV	6CC1937	0.10730 )	( 46748 )	EV	13CC1937	0.04270 )
( 46767 )	EV	27CC1937	0.06963 )	( 46749 )	EV	12MR1938	0.01214 )	( 46768 )	EV	16MR1938	0.07250 )
( 46762 )	EV	18MR1938	1.01456 )	( 46759 )	EV	19MY1938	0.00338 )	( 46761 )	EV	27MY1938	0.00545 )
( 46766 )	EV	14DE1938	0.06337 )	( 1229 )	D 5	14MY1964	0.00846 )	( 1230 )	E 2	16MY1964	0.01482 )
( 1231 )	E 3	16MY1964	0.01223 )	( 1232 )	E 5	16MY1964	0.08000 )	( 1233 )	B 3	5JN2964	0.00476 )
( 1234 )	B 3	18JN1964	0.00843 )	( 1235 )	C 7	16JN1964	0.00282 )	( 1439 )	B 6	5JN1964	0.00799 )
( 1236 )	C* 1	8JN1964	0.00175 )	( 1237 )	C* 2	8JN1964	0.00258 )	( 1238 )	D 3	11JN1964	0.00400 )
( 1239 )	D 4	11JN1964	0.00116 )	( 1240 )	D 6	10JN1964	0.00153 )	( 1241 )	E 2	13JN1964	0.00148 )
( 1244 )	F 1	11JN1964	0.00548 )	( 1245 )	F 2	11JN1964	0.10027 )	( 1246 )	F 3	11JN1964	0.01793 )
( 1248 )	B 3	24JL1964	0.01182 )	( 1441 )	B 6	24JL1964	0.00661 )	( 1250 )	C 6	10JL1964	0.00822 )
( 1251 )	C 7	16JL1964	0.00290 )	( 1252 )	C* 1	16JL1964	0.00837 )	( 1254 )	D 2	15JL1964	0.01532 )
( 1255 )	D 5	15JL1964	0.00513 )	( 1256 )	E 2	14JL1964	0.00550 )	( 1257 )	E 3	14JL1964	0.00479 )
( 1258 )	F 1	6JL1964	0.03068 )	( 1259 )	F 2	6JL1964	0.08366 )	( 1260 )	F 3	6JL1964	0.02865 )
( 1261 )	B 3	2AU1964	0.12364 )	( 1262 )	B 3	17AU1964	0.58799 )	( 1442 )	B 6	2AU1964	0.05118 )
( 1443 )	B 6	16AU1964	2.45081 )	( 1263 )	C 7	15AU1964	1.68134 )	( 1265 )	C* 2	10AU1964	0.07154 )
( 1267 )	D 6	18AU1964	0.03243 )	( 1268 )	E 2	15AU1964	0.42127 )	( 1269 )	E 3	15AU1964	0.95927 )
( 1270 )	F 1	10AU1964	3.04969 )	( 1444 )	B 6	19SE1964	1.37925 )	( 1271 )	C 7	22SE1964	0.13057 )
( 1272 )	C* 1	10SE1964	0.57464 )	( 1273 )	C* 2	10SE1964	1.37642 )	( 1274 )	D 1	17SE1964	0.12688 )
( 1275 )	D 2	17SE1964	0.49674 )	( 1276 )	D 3	18SE1964	0.30174 )	( 1277 )	D 4	18SE1964	0.32842 )
( 1278 )	D 6	18SE1964	0.04996 )	( 1279 )	E 1	16SE1964	0.11387 )	( 1280 )	E 2	16SE1964	0.10212 )
( 1281 )	E 3	16SE1964	0.19621 )	( 1282 )	E 4	16SE1964	0.23269 )	( 1283 )	E 5	16SE1964	0.50877 )
( 1284 )	E 6	17SE1964	0.66724 )	( 1285 )	F 1	15SE1964	5.29963 )	( 1286 )	F 2	15SE1964	2.80210 )
( 1287 )	F 3	15SE1964	2.45196 )	( 1288 )	B 3	15CC1964	0.03701 )	( 1289 )	C 7	14CC1964	0.07475 )
( 1290 )	C* 1	16CC1964	0.02653 )	( 1291 )	C* 2	16CC1964	0.03180 )	( 1292 )	D 1	15CC1964	0.18634 )
( 1293 )	D 2	15CC1964	0.11791 )	( 1294 )	D 3	15CC1964	0.35600 )	( 1295 )	D 4	15CC1964	1.14758 )
( 1296 )	D 5	14CC1964	0.64917 )	( 1297 )	D 6	14CC1964	0.00952 )	( 1298 )	E 1	12CC1964	0.03770 )
( 1299 )	E 2	12CC1964	0.21992 )	( 1300 )	E 3	13CC1964	1.25291 )	( 1301 )	E 4	13CC1964	1.13044 )
( 1302 )	E 5	13CC1964	1.23087 )	( 1303 )	E 6	13CC1964	1.17911 )	( 1304 )	F 1	11CC1964	0.65006 )
( 1305 )	F 2	11CC1964	0.60380 )	( 1306 )	F 3	11CC1964	1.06713 )	( 1307 )	B 6	NO1964	0.14071 )
( 1308 )	C 7	6NO1964	0.02129 )	( 1309 )	C* 1	10NO1964	0.03216 )	( 1310 )	C* 2	10NO1964	0.14286 )
( 1311 )	D 1	8NO1964	0.03612 )	( 1312 )	D 2	8NO1964	0.05277 )	( 1313 )	D 3	9NO1964	0.09459 )
( 1314 )	D 4	9NO1964	0.11770 )	( 1315 )	D 5	9NO1964	0.06824 )	( 1316 )	D 6	9NO1964	0.00756 )
( 1317 )	E 1	6NO1964	0.02872 )	( 1318 )	E 2	7NO1964	0.15791 )	( 1319 )	E 3	7NO1964	0.46605 )
( 1320 )	E 4	7NO1964	0.31851 )	( 1321 )	E 5	7NO1964	0.44691 )	( 1322 )	E 6	7NO1964	0.12664 )
( 1323 )	F 1	6NO1964	0.58537 )	( 1324 )	F 2	6NO1964	0.25155 )	( 1325 )	F 3	6NO1964	0.13250 )
( 1336 )	C 3	27JA1967	0.00963 )	( 1337 )	C 3	2MR1967	0.08084 )	( 1338 )	C 3	2MR1967	0.00785 )
( 1339 )	C 5	28MR1967	0.04053 )	( 1340 )	C 7	28MR1967	0.00364 )	( 1341 )	A 3	19AP1967	0.00976 )
( 1342 )	A 4	19AP1967	0.08662 )	( 1343 )	A 6	19AP1967	0.00069 )	( 1344 )	C 3	25AP1967	0.00662 )
( 1345 )	C 5	25AP1967	0.18323 )	( 1346 )	C 7	21AP1967	0.06142 )	( 1347 )	E 2	23AP1967	0.01301 )
( 1348 )	E 5	23AP1967	0.00822 )	( 1348 )	A 3	4MY1967	0.00943 )	( 1372 )	C 5	5MY1967	0.02128 )
( 1373 )	C 7	5MY1967	0.02282 )	( 1374 )	E 2	7MY1967	0.00299 )	( 1375 )	E 3	7MY1967	0.01203 )
( 1376 )	E 5	6MY1967	0.00562 )	( 1408 )	A 3	23MY1967	0.00447 )	( 1410 )	A 6	24MY1967	0.00564 )
( 1411 )	C 3	31MY1967	0.02462 )	( 1413 )	C 7	25MY1967	0.00316 )	( 1414 )	E 2	28MY1967	0.00336 )
( 1416 )	E 5	28MY1967	0.00437 )	( 1431 )	A 3	12JN1967	0.00257 )	( 1433 )	C 3	17JN1967	0.01292 )
( 1434 )	C 5	17JN1967	0.00598 )	( 1435 )	C 7	13JN1967	0.00316 )	( 1436 )	E 2	15JN1967	0.00724 )
( 1446 )	A 3	11JL1967	0.00489 )	( 1449 )	C 3	16JL1967	0.17196 )	( 1450 )	C 5	16JL1967	0.01333 )
( 1451 )	C 7	16JL1967	0.00394 )	( 1452 )	E 2	14JL1967	0.01277 )	( 1453 )	E 3	15JL1967	0.00506 )
( 1454 )	E 5	15JL1967	0.01000 )	( 1504 )	A 3	28AU1967	0.31354 )	( 1505 )	A 4	28AU1967	0.39678 )
( 1506 )	A 6	29AU1967	0.01046 )	( 1508 )	C 3	2SE1967	0.08792 )	( 1509 )	C 5	2SE1967	1.32734 )
( 1510 )	C 7	29AU1967	0.55327 )	( 1511 )	E 2	1SE1967	1.18182 )	( 1512 )	E 3	1SE1967	1.00518 )
( 1513 )	E 5	31AU1967	1.77359 )	( 1532 )	A 3	18SE1967	0.04599 )	( 1533 )	A 4	19SE1967	0.02249 )
( 1534 )	A 6	19SE1967	0.01551 )	( 1535 )	C 7	20SE1967	0.05472 )	( 1536 )	E 2	24SE1967	0.14452 )
( 1537 )	E 3	24SE1967	1.10411 )	( 1538 )	E 5	23SE1967	0.32591 )	( 1539 )	C 3	40C1967	0.31700 )
( 1540 )	C 5	40C1967	0.59066 )	( 1541 )	E 2	110C1967	0.74504 )	( 1542 )	E 3	110C1967	6.40765 )
( 1543 )	E 5	10CC1967	1.50840 )	( 1379 )	GS 3	9MY1967	0.00928 )	( 1380 )	GS 4	9MY1967	0.01513 )
( 1381 )	GS 5	10MY1967	0.00954 )	( 1382 )	GS 6	10MY1967	0.03608 )	( 1383 )	GS 7	10MY1967	0.01069 )
( 1384 )	GS 8	10MY1967	0.01109 )	( 1385 )	GS 9	10MY1967	0.00942 )	( 1386 )	GS10	12MY1967	0.00575 )
( 1387 )	GS11	12MY1967	0.01980 )	( 1388 )	GS12	12MY1967	0.04827 )	( 1389 )	GS13	12MY1967	0.01031 )
( 1390 )	GS14	12MY1967	0.01174 )	( 1391 )	GS15	12MY1967	0.00479 )	( 1392 )	GS16	12MY1967	0.02157 )
( 1393 )	GS17	13MY1967	0.00548 )	( 1394 )	GS18	13MY1967	0.01204 )	( 1395 )	GS19	13MY1967	0.00470 )
( 1396 )	GS20	13MY1967	0.00148 )	( 1554 )	GS 1	30C1967	0.06404 )	( 1555 )	GS 2	30C1967	0.92867 )
( 1556 )	GS 3	30C1967	2.55514 )	( 1557 )	GS 4	30C1967	3.13901 )	( 1558 )	GS 5	40C1967	3.32963 )
( 1559 )	GS 7	40C1967	1.34644 )	( 1560 )	GS 8	4CC1967	1.65305 )	( 1561 )	GS 9	40C1967	1.17391 )
( 1562 )	GS10	50C1967	0.30098 )	( 1566 )	GS14	50C1967	0.02752 )	( 1567 )	GS15	50C1967	0.13972 )
( 1568 )	GS16	50C1967	0.01154 )	( 1569 )	GS17	50C1967	0.23040 )	( 1570 )	GS18	50C1967	0.14875 )
( 1571 )	GS19	60C1967	0.00293 )	( 1573 )	GS21	60C1967	0.00448 )	( 1574 )	GS22	60C1967	0.02588 )
( 1575 )	GS28	60C1967	0.00258 )	( 1544 )	MU 1	20C1967	0.00238 )	( 1547 )	MS 1	20C1967	0.03194 )
( 1524 )	MI 1	20SE1967	0.02189 )	( 1546 )	LU 1	20C1967	0.03001 )	( 1520 )	HO 1	18SE1967	0.02357 )
( 1521 )	SH 1	18SE1967	0.02885 )	( 1522 )	BH 1	18SE1967	0.00365 )	( 1523 )	RA 1	19SE1967	0.04613 )
( 1526 )	MO 1	20SE1967	0.03982 )	( 1527 )	TR 1	20SE1967	0.03145 )	( 1528 )	SB 1	20SE1967	0.02888 )
( 1529 )	KW 1	20SE1967	0.09593 )	( 1530 )	FR 1	24SE1967	0.08001 )	( 1531 )	CH 1	25SE1967	0.00845 )
( 1545 )	WL 1	20C1967	0.42570 )	( 1548 )	CA 1	3CC1967	4.47780 )	( 1549 )	MQ 1	40C1967	1.72674 )
( 1551 )	ES 1	50C1967	1.66147 )	( 1552 )	SM 1	60C1967	0.02641 )	( 1550 )	MR 1	50C1967	0.21063 )
( 1553 )	SG 1	60C1967	0.03672 )	( 1551 )	MI 2	21AP1967	0.00310 )	( 1417 )	HO 2	22MY1967	0.01122 )
( 1350 )	BH 2	19AP1967	0.00220 )	( 1399 )	Ph 2	5MY1967	0.00680 )	( 1401 )	MO 2	6MY1967	0.00588 )
( 1400 )	SB 2	6MY1967	0.00596 )	( 1352 )	KW 2	21AP1967	0.00859 )	( 1429 )	WL 2	29MY1967	0.01062 )
( 1403 )	CA 2	10MY1967	0.32693 )	( 1404 )	MC 2	10MY1967	0.05081 )	( 1405 )	ES 2	12MY1967	0.05160 )
( 1407 )	SM 2	14MY1967	0.01791 )	( 1349 )	CI 2	19AP1967	0.01437 )	( 1420 )	IH 2	23MY1967	0.01511 )
( 1421 )	CH 2	23MY1967	0.05205 )	( 1422 )	GA 2	23MY1967	0.00511 )	( 1423 )	WA 2	25MY1967	0.00856 )

*Cyclotella ocellata* Pant.

*Cyclotella ocellata* Pantocsek, Res. Wiss. Erforsh. Balatonsees, Sec. I.,  
p. 104, fig. 318. 1902.

Cells cylindrical, surface of the valves flat or only slightly concave. Cells always occur singly. Specimens from Lake Michigan 6-22 $\mu$  in diameter. Marginal zone narrow, less than one-half the radius of the valve. Radial striae in the marginal zone irregular in length, without visible substructure, about 14-16 in 10 $\mu$  at the margin of the valve. Ornamentation of the marginal zone other than the striae is lacking in this species. Two types of structure are present in the central area. Several distinct puncta, either randomly or radially arranged, are present in most specimens. The most distinctive characteristic of this species is the presence of several large (about 1 $\mu$  diameter) circular silicious structures. In valve view these appear as thickenings on the valve surface. In girdle view they appear as fungiform papillae. These structures, like the puncta, may be randomly arranged or, more usually, radially disposed.

Although previous reports indicate that this species reaches its greatest abundance in littoral habitats, it is apparently also adapted to euplanktonic growth as it is quite common in offshore collections from the Great Lakes. It reaches its greatest abundance in Lake Huron but is also found in abundance in Lake Superior and in some collections from northern Lake Michigan. The morphology of this taxon is very similar to the *C. kuetzingiana* complex, but the presence of the fungiform papillae makes their separation relatively easy.

127 CYOTELLA TCT NO OF STATIONS 270

( 60973 )	CH	1876	0.4C151 )	( 3540 )	CH	11MY1875	0.23296 )	( 3541 )	CH	1FE1881	0.29346 )
( 3507 )	CH	19FE1881	0.16980 )	( 46510 )	CH	0C1945	0.00109 )	( 46921 )	CH	23NO1945	0.00582 )
( 46517 )	CH	12JA1546	0.01275 )	( 46915 )	CH	20FE1546	0.02845 )	( 46914 )	CH	19AP1546	0.01922 )
( 46924 )	CH	10MY1946	0.01411 )	( 46923 )	CH	22NO1946	0.00437 )	( 46920 )	CH	20DE1946	0.00031 )
( 46905 )	CH	JA1947	0.01961 )	( 46505 )	CH	MR1947	0.00455 )	( 46916 )	CH	4MY1547	0.00780 )
( 46906 )	CH	MY1947	0.21570 )	( 46919 )	CH	5JN1947	0.05463 )	( 46907 )	CH	JL1947	0.07052 )
( 46922 )	CH	21AU1547	0.56703 )	( 46758 )	EV	5JN1937	0.01426 )	( 46771 )	EV	11JN1937	0.00475 )
( 46743 )	EV	20JN1937	0.01713 )	( 46745 )	EV	3JL1937	0.02090 )	( 46764 )	EV	17JL1937	0.16116 )
( 46757 )	EV	25JL1937	0.18295 )	( 46747 )	EV	1AU1937	0.02723 )	( 46763 )	EV	23AU1937	0.10146 )
( 46765 )	EV	30AU1937	0.02231 )	( 46752 )	EV	15SE1937	0.02177 )	( 46750 )	EV	24SE1937	0.00471 )
( 46744 )	EV	60C1537	0.01462 )	( 46748 )	EV	130C1937	0.02135 )	( 46749 )	EV	12MR1938	0.00609 )
( 46762 )	EV	18MR1938	0.04411 )	( 46751 )	EV	30MR1938	0.03350 )	( 46756 )	EV	27AP1938	0.00168 )
( 46759 )	EV	19MY1938	0.01688 )	( 46761 )	EV	27MY1938	0.01090 )	( 1226 )	C 7	16MY1964	0.00381 )
( 1227 )	C* 2	13MY1964	0.00219 )	( 1228 )	D 2	14MY1964	0.00584 )	( 1229 )	D 5	14MY1964	0.02749 )
( 1230 )	E 2	16MY1964	0.00889 )	( 1231 )	E 3	16MY1964	0.01223 )	( 1232 )	E 5	16MY1964	0.01044 )
( 1234 )	B 3	18JN1964	0.00562 )	( 1439 )	B 6	5JN1964	0.00400 )	( 1237 )	C* 2	8JN1964	0.00516 )
( 1238 )	D 3	11JN1964	0.01600 )	( 1239 )	D 4	11JN1964	0.00116 )	( 1240 )	D 6	10JN1964	0.00767 )
( 1241 )	E 2	13JN1964	0.00739 )	( 1242 )	E 3	13JN1964	0.00599 )	( 1243 )	E 6	13JN1964	0.01879 )
( 1244 )	F 1	11JN1964	0.00877 )	( 1245 )	F 2	11JN1964	0.01037 )	( 1246 )	F 3	11JN1964	0.02390 )
( 1247 )	B 3	14JL1964	0.01707 )	( 1248 )	B 3	24JL1964	0.00591 )	( 1440 )	B 6	11JL1964	0.05159 )
( 1441 )	B 6	24JL1964	0.09251 )	( 1249 )	C 3	8JL1964	0.00272 )	( 1250 )	C 6	10JL1964	0.08222 )
( 1251 )	C 7	16JL1964	0.01159 )	( 1252 )	C* 1	16JL1964	0.00279 )	( 1253 )	C* 2	16JL1964	0.03423 )
( 1254 )	D 2	15JL1964	0.12067 )	( 1255 )	D 5	15JL1964	0.39526 )	( 1256 )	E 2	14JL1964	0.08244 )
( 1257 )	E 3	14JL1964	0.07656 )	( 1258 )	F 1	6JL1964	0.08259 )	( 1259 )	F 2	6JL1964	0.13014 )
( 1260 )	F 3	6JL1964	0.07831 )	( 1261 )	B 3	2AU1964	0.00589 )	( 1442 )	B 6	2AU1964	0.13306 )
( 1443 )	B 6	16AU1964	0.01186 )	( 1263 )	C 7	15AU1964	0.00400 )	( 1264 )	C* 1	10AU1964	0.01545 )
( 1265 )	C* 2	10AU1964	0.09389 )	( 1266 )	D 3	18AU1964	0.49109 )	( 1267 )	D 6	18AU1964	0.01081 )
( 1268 )	E 2	15AU1964	0.38297 )	( 1269 )	E 3	15AU1964	0.25763 )	( 1270 )	F 1	10AU1964	0.47651 )
( 1444 )	B 6	19SE1964	0.00606 )	( 1271 )	C 7	22SE1964	0.01306 )	( 1273 )	C* 2	10SE1964	0.01075 )
( 1275 )	D 2	17SE1964	0.01290 )	( 1276 )	D 3	18SE1964	0.01118 )	( 1278 )	D 6	18SE1964	0.00384 )
( 1279 )	E 1	16SE1964	0.00393 )	( 1280 )	E 2	16SE1964	0.01362 )	( 1281 )	E 3	16SE1964	0.02747 )
( 1282 )	E 4	16SE1964	0.01108 )	( 1283 )	E 5	16SE1964	0.08582 )	( 1284 )	E 6	17SE1964	0.04766 )
( 1285 )	F 1	15SE1964	0.11648 )	( 1287 )	F 3	15SE1964	0.06505 )	( 1445 )	B 6	140C1964	0.00652 )
( 1289 )	C 7	140C1964	0.00440 )	( 1290 )	C* 1	160C1964	0.00379 )	( 1293 )	D 2	150C1964	0.03302 )
( 1294 )	D 3	150C1964	0.04615 )	( 1295 )	D 4	150C1964	0.07730 )	( 1296 )	D 5	140C1964	0.02361 )
( 1297 )	D 6	140C1964	0.00571 )	( 1298 )	E 1	120C1964	0.00269 )	( 1299 )	E 2	120C1964	0.00942 )
( 1300 )	E 3	130C1964	0.02148 )	( 1301 )	E 4	130C1964	0.06624 )	( 1302 )	E 5	130C1964	0.17005 )
( 1303 )	E 6	130C1964	0.04478 )	( 1304 )	F 1	110C1964	0.02223 )	( 1305 )	F 2	110C1964	0.00518 )
( 1306 )	F 3	110C1964	0.00832 )	( 1307 )	B 6	NO1964	0.00722 )	( 1309 )	C* 1	10NO1964	0.00322 )
( 1311 )	D 1	8NO1964	0.00516 )	( 1312 )	D 2	8NO1964	0.00621 )	( 1313 )	D 3	9NO1964	0.01737 )
( 1314 )	D 4	9NO1964	0.00287 )	( 1315 )	D 5	9NO1964	0.00910 )	( 1316 )	D 6	9NO1964	0.00756 )

( 1317	E 1	6ND1964	0.00766 )	( 1318	E 2	7ND1964	0.02854 )	( 1319	E 3	7ND1964	C.22255 )
( 1320	E 4	7ND1964	C.03723 )	( 1321	E 5	7ND1964	C.02235 )	( 1322	E 6	7ND1964	C.00667 )
( 1323	F 1	6ND1964	0.00697 )	( 1324	F 2	6ND1964	C.00699 )	( 1326	C 3	27JA1967	C.00193 )
( 1337	C 3	2MR1967	0.01029 )	( 1338	C 3	28MR1967	C.04496 )	( 1339	C 5	28MR1967	C.02806 )
( 1340	C 7	28MR1967	0.02327 )	( 1341	A 3	19AP1967	0.02170 )	( 1342	A 4	19AP1967	C.05233 )
( 1343	A 6	19AP1967	0.00065 )	( 1344	C 3	25AP1967	C.00496 )	( 1345	C 5	25AP1967	C.07407 )
( 1346	C 7	21AP1967	C.02804 )	( 1347	E 2	23AP1967	C.02439 )	( 1348	E 5	23AP1967	C.00548 )
( 1368	A 3	4MY1967	C.00943 )	( 1369	A 4	4MY1967	0.01118 )	( 1370	A 6	3MY1967	C.00921 )
( 1371	C 3	4MY1967	0.00693 )	( 1372	C 5	5MY1967	C.01064 )	( 1373	C 7	5MY1967	C.18255 )
( 1374	E 2	7MY1967	C.01793 )	( 1375	E 3	7MY1967	C.08181 )	( 1376	E 5	6MY1967	C.04775 )
( 1409	A 4	23MY1967	0.00595 )	( 1410	A 6	24MY1967	C.01128 )	( 1411	C 3	31MY1967	C.01231 )
( 1412	C 5	31MY1967	0.00421 )	( 1413	C 7	25MY1967	C.00548 )	( 1414	E 2	28MY1967	C.00672 )
( 1415	E 3	28MY1967	0.00225 )	( 1416	E 5	28MY1967	0.00656 )	( 1431	A 3	12JN1967	C.01802 )
( 1432	A 4	13JN1967	C.01788 )	( 1433	C 3	17JN1967	C.08397 )	( 1434	C 5	17JN1967	C.02393 )
( 1435	C 7	13JN1967	0.02210 )	( 1436	E 2	15JN1967	C.03257 )	( 1437	E 3	15JN1967	C.00269 )
( 1438	E 5	14JN1967	C.01089 )	( 1446	A 3	11JL1967	0.10273 )	( 1447	A 4	11JL1967	C.01871 )
( 1448	A 6	10JL1967	0.00354 )	( 1449	C 3	14JL1967	C.16050 )	( 1450	C 5	16JL1967	C.19804 )
( 1451	C 7	16JL1967	0.00394 )	( 1452	E 2	14JL1967	C.03193 )	( 1453	E 3	15JL1967	C.13902 )
( 1454	E 5	15JL1967	0.09202 )	( 1504	A 3	28AU1967	C.00741 )	( 1505	A 4	28AU1967	C.01031 )
( 1508	C 3	2SE1967	0.00400 )	( 1509	C 5	2SE1967	C.70657 )	( 1510	C 7	29AU1967	C.02845 )
( 1511	E 2	1SE1967	2.57851 )	( 1512	E 3	1SE1967	C.27485 )	( 1513	E 5	31AU1967	C.60302 )
( 1532	A 3	18SE1967	0.00986 )	( 1533	A 4	19SE1967	C.03714 )	( 1536	E 2	24SE1967	C.22632 )
( 1537	E 3	24SE1967	1.50953 )	( 1538	E 5	23SE1967	C.09391 )	( 1540	C 5	40C1967	C.26307 )
( 1541	E 2	11OC1967	0.28205 )	( 1542	E 3	11OC1967	3.38181 )	( 1543	E 5	100C1967	C.10056 )
( 1378	GS 2	9MY1967	0.00421 )	( 1379	GS 3	9MY1967	0.05571 )	( 1380	GS 4	9MY1967	C.01513 )
( 1381	GS 5	10MY1967	0.01431 )	( 1382	GS 6	10MY1967	0.09714 )	( 1383	GS 7	10MY1967	0.04544 )
( 1384	GS 8	10MY1967	0.08319 )	( 1385	GS 9	10MY1967	0.00471 )	( 1386	GS10	12MY1967	C.11204 )
( 1387	GS11	12MY1967	0.07129 )	( 1388	GS12	12MY1967	0.04223 )	( 1389	GS13	12MY1967	C.01547 )
( 1390	GS14	12MY1967	0.04110 )	( 1391	GS15	12MY1967	0.06225 )	( 1392	GS16	12MY1967	C.04623 )
( 1393	GS17	13MY1967	0.12601 )	( 1394	GS18	13MY1967	C.03096 )	( 1395	GS19	13MY1967	C.00822 )
( 1398	GS22	14MY1967	0.02125 )	( 1554	GS 1	30C1967	0.08895 )	( 1555	GS 2	30C1967	C.44845 )
( 1556	GS 3	30C1967	0.23987 )	( 1557	GS 4	30C1967	0.36248 )	( 1558	GS 5	40C1967	C.30918 )
( 1559	GS 7	40C1967	0.32874 )	( 1560	GS 8	40C1967	C.41562 )	( 1561	GS 9	40C1967	C.10565 )
( 1562	GS10	50C1967	0.15789 )	( 1563	GS11	50C1967	C.01169 )	( 1564	GS12	50C1967	C.00165 )
( 1565	GS13	50C1967	C.00507 )	( 1566	GS14	50C1967	0.00183 )	( 1567	GS15	50C1967	C.03969 )
( 1568	GS16	50C1967	0.00433 )	( 1569	GS17	50C1967	0.02676 )	( 1570	GS18	50C1967	C.08925 )
( 1573	GS21	60C1967	0.00112 )	( 1574	GS22	60C1967	0.00575 )	( 1575	GS28	60C1967	0.00129 )
( 1544	MU 1	20C1967	0.00238 )	( 1547	MS 1	20C1967	0.01597 )	( 1520	HO 1	18SE1967	C.00471 )
( 1521	SH 1	18SE1967	0.00577 )	( 1526	MO 1	20SE1967	0.01707 )	( 1527	TR 1	20SE1967	0.00629 )
( 1528	SB 1	20SE1967	0.04332 )	( 1529	KW 1	20SE1967	0.02398 )	( 1530	FR 1	24SE1967	C.03000 )
( 1531	GH 1	25SE1967	0.00845 )	( 1545	WL 1	20C1967	0.10136 )	( 1548	CA 1	30C1967	C.02544 )
( 1549	MQ 1	40C1967	0.04111 )	( 1551	ES 1	50C1967	C.19171 )	( 1550	NR 1	50C1967	C.08673 )
( 1553	SG 1	60C1967	0.05141 )	( 1351	MI 2	21AP1967	0.01241 )	( 1427	LU 2	29MY1967	C.13317 )
( 1417	HO 2	22MY1967	0.01495 )	( 1425	RA 2	25PY1967	0.02652 )	( 1399	FW 2	5MY1967	C.04761 )
( 1401	MO 2	6MY1967	0.02352 )	( 1402	TR 2	6MY1967	0.02707 )	( 1400	SB 2	6PY1967	C.02383 )
( 1352	KW 2	21AP1967	0.02577 )	( 1354	GH 2	25AP1967	0.00173 )	( 1429	WL 2	29MY1967	C.01062 )
( 1403	CA 2	10MY1967	0.10462 )	( 1404	MC 2	10MY1967	0.03811 )	( 1405	ES 2	12MY1967	C.03870 )
( 1349	CI 2	15AP1967	0.00359 )	( 1420	IM 2	23MY1967	0.01511 )	( 1421	CH 2	23MY1967	C.06540 )
( 1423	WA 2	25MY1967	0.02141 )	( 1424	KN 2	25MY1967	0.01332 )	( 1430	PC 2	12JN1967	C.02467 )

*Cyclotella operculata* (Agardh) Kütz.

*Frustulia operculata* Agardh, Bot. Zeitschr., 1827:627. 1827.

*Cyclotella operculata* (Agardh) Kütz., Syn. Diat., p. 7. 1834.

Cells cylindrical with slightly excentrically undulate valves. Cells always occur singly. Specimens from Lake Michigan 8-32 $\mu$  in diameter. Ornamentation of the marginal zone consists of narrow striae chambers separated by very poorly developed radial costae. Near the margin of the valve the striae chambers open to the interior of the frustule by a series of foramina that appear as a series of bright or dark spots under the light microscope, depending on the level of focus. Striae 15-18 in 10 $\mu$  near the margin of the valve. The external surface of the striae chambers has a double row of very fine punctae. These are very difficult to resolve and can be seen only with ideal specimens and the best optical equipment. The central area in this species is without visible ornamentation and is usually slightly excentric. In some specimens one or more shortened striae of peculiar structure occur at the margin of the valve.

This species apparently belongs to the complex of described entities with affinities to *C. striata*. It in some respect resembles *C. michiganiana* but is easily differentiated from that taxon by the lack of ornamentation of the central area and its only slightly undulate valves. This species occurrence in Lake Michigan is highly irregular and only occasional collections have it in abundance. It appears that its primary habitat may be in the phytobenthos and that it is only opportunistically planktonic. It is also found in some inland lakes in Michigan. Specimens from these habitats tend to be larger in average size and to have more robust structure than those from Lake Michigan.

128 CYPLANKT TOT NC OF STATIONS 170

(46910	CH	0C1945	C.00874	(46921	CH	23NC1945	C.01293	(46917	CH	12JA1946	C.C1275
(46915	CH	20FE1946	0.01138	(46914	CH	19AP1946	0.00320	(46924	CH	10MY1946	0.00141
(46923	CH	22NO1946	0.01748	(46920	CH	20DE1946	0.00555	(46905	CH	JA1947	C.CC981
(46922	CH	21AU1947	0.00242	(1228	D 2	14MY1964	0.00389	(1229	D 5	14MY1964	C.C1057
(1230	E 2	16MY1964	0.00296	(1231	E 3	16MY1964	C.00489	(1232	E 5	16MY1964	0.03131
(1234	B 3	18JN1964	0.00281	(1235	C 7	16JN1964	0.00282	(1439	B 6	5JN1964	C.CC400
(1237	C* 2	8JN1964	0.00258	(1238	D 3	11JN1964	C.00200	(1240	D 6	10JN1964	C.00307
(1244	F 1	11JN1964	0.05811	(1245	F 2	11JN1964	C.06224	(1246	F 3	11JN1964	C.C5379
(1255	D 5	15JL1964	0.00257	(1258	F 1	6JL1964	0.01180	(1259	F 2	6JL1964	C.C4028
(1260	F 3	6JL1964	0.01146	(1442	B 6	2AU1964	0.00341	(1264	C* 1	10AU1964	C.CC579
(1265	C* 2	10AU1964	0.00224	(1266	D 3	18AU1964	1.22773	(1267	D 6	18AU1964	0.00649
(1268	E 2	15AU1964	0.04924	(1269	E 3	15AU1964	0.57556	(1270	F 1	10AU1964	C.C1459
(1272	C* 1	10SE1964	0.63211	(1273	C* 2	10SE1964	0.30647	(1274	D 1	17SE1964	C.C3284
(1275	D 2	17SE1964	0.45158	(1276	D 3	18SE1964	C.08941	(1277	D 4	18SE1964	C.05577
(1278	D 6	18SE1964	0.41508	(1279	E 1	16SE1964	0.65968	(1280	E 2	16SE1964	C.95309
(1281	E 3	16SE1964	1.19295	(1282	E 4	16SE1964	2.32687	(1283	E 5	16SE1964	3.43263
(1284	E 6	17SE1964	2.44654	(1285	F 1	15SE1964	4.89197	(1286	F 2	15SE1964	2.68170
(1287	F 3	15SE1964	1.92654	(1288	B 3	15CC1964	C.01306	(1289	C 7	14OC1964	C.C0159
(1290	C* 1	16OC1964	0.05306	(1291	C* 2	16OC1964	C.01957	(1292	D 1	15OC1964	0.07454
(1293	D 2	15OC1964	0.08018	(1294	D 3	15OC1964	0.46148	(1295	D 4	15OC1964	C.83244
(1296	D 5	14OC1964	0.03541	(1297	D 6	14OC1964	C.02666	(1298	E 1	12OC1964	C.13195
(1299	E 2	12OC1964	0.43984	(1300	E 2	13OC1964	1.08824	(1301	E 4	13OC1964	4.63658
(1302	E 5	13OC1964	8.21929	(1303	E 6	13OC1964	1.08026	(1304	F 1	11OC1964	1.72874
(1305	F 2	11OC1964	0.72456	(1306	F 3	11OC1964	2.23128	(1307	B 6	NO1964	0.01443
(1308	C 7	6NO1964	0.00608	(1309	C* 1	10ND1964	C.02412	(1310	C* 2	10NC1964	C.C2041
(1311	D 1	8NO1964	0.01290	(1312	D 2	8NO1964	0.02483	(1313	D 3	9NO1964	C.C5459
(1314	D 4	9NO1964	0.08038	(1315	D 5	9NO1964	C.C1820	(1316	D 6	9NC1964	C.05289
(1317	E 1	6NO1964	0.04021	(1318	E 2	7NO1964	0.17313	(1319	E 3	7NO1964	C.51640
(1320	E 4	7NO1964	0.34747	(1321	E 5	7NO1964	C.53630	(1322	E 6	7NO1964	C.58320
(1323	F 1	6NO1964	0.63415	(1324	F 2	6NO1964	0.42392	(1325	F 3	6NO1964	C.61714
(1337	C 3	2MR1967	0.00147	(1338	C 3	28MR1967	0.00264	(1339	C 5	28MR1967	C.00624
(1340	C 7	28MR1967	0.00073	(1341	A 3	19AP1967	0.00108	(1345	C 5	25AP1967	C.CC195
(1346	C 7	21AP1967	0.00267	(1369	A 4	4MY1967	0.00373	(1373	C 7	5MY1967	C.00285
(1374	E 2	7MY1967	0.00299	(1375	E 3	7MY1967	0.00481	(1410	A 6	24MY1967	C.CC564
(1411	C 3	31MY1967	0.00410	(1449	C 3	16JL1967	0.00382	(1504	A 3	28AU1967	0.04444
(1512	E 3	1SE1967	0.00785	(1536	E 2	24SE1967	0.00545	(1537	E 3	24SE1967	C.C3019
(1538	E 5	23SE1967	0.05943	(1541	E 2	11OC1967	0.00532	(1542	E 3	11OC1967	C.35598
(1543	E 5	10OC1967	0.00718	(1379	GS 3	9MY1967	C.00928	(1380	GS 4	9MY1967	C.10762
(1381	GS 5	10MY1967	0.00716	(1382	GS 6	10MY1967	0.03053	(1383	GS 7	10MY1967	C.04544
(1384	GS 8	10MY1967	0.02773	(1385	GS 9	10MY1967	C.00706	(1386	GS10	12MY1967	C.01724
(1387	GS11	12MY1967	0.07129	(1388	GS12	12MY1967	0.02413	(1389	GS13	12MY1967	C.01805
(1390	GS14	12MY1967	0.05285	(1391	GS15	12MY1967	0.01915	(1392	GS16	12MY1967	C.C4623
(1393	GS17	13MY1967	0.00822	(1394	GS18	13MY1967	0.01204	(1395	GS19	13MY1967	C.00587
(1398	GS22	14MY1967	C.00304	(1554	GS 1	30C1967	C.02491	(1555	GS 2	30C1967	C.38489
(1556	GS 3	30C1967	0.36502	(1557	GS 4	30C1967	1.70030	(1558	GS 5	40C1967	1.80355
(1559	GS 7	40C1967	1.22403	(1560	GS 8	40C1967	1.98366	(1561	GS 9	40C1967	0.59870
(1562	GS10	50C1967	0.10115	(1563	GS11	50C1967	C.16368	(1564	GS12	50C1967	C.25512
(1565	GS13	50C1967	C.39550	(1566	GS14	50C1967	C.77050	(1567	GS15	50C1967	C.21754
(1568	GS16	50C1967	0.01876	(1569	GS17	50C1967	0.13973	(1570	GS18	50C1967	C.C6942
(1571	GS19	60C1967	0.00117	(1573	GS21	60C1967	C.00112	(1574	GS22	60C1967	C.C1438
(1575	GS28	60C1967	0.00129	(1522	BH 1	18SE1967	0.00365	(1548	CA 1	30C1967	0.86503
(1549	MQ 1	40C1967	C.93189	(1551	ES 1	50C1967	C.17573	(1553	SG 1	60C1967	C.C1469
(1428	MU 2	29MY1967	0.00301	(1426	MS 2	29MY1967	C.01050	(1418	SH 2	22MY1967	C.C1555
(1350	BH 2	19AP1967	0.00661	(1399	PW 2	5MY1967	C.CC680	(1402	TR 2	6MY1967	0.00541
(1352	KW 2	21AP1967	0.00859	(1403	CA 2	10MY1967	0.23539	(1404	MQ 2	10MY1967	C.C5081
(1405	ES 2	12MY1967	0.04515	(1407	SM 2	14MY1967	0.01791	(1420	IH 2	23MY1967	0.01511
(1422	GA 2	23MY1967	0.00511	(1423	WA 2	25MY1967	0.00428	(			

# *Cyclotella pseudostelligera* Hust.

*Cyclotella pseudostelligera* Hustedt in: Huber-Pestalozzi, Binnengew., 16(2):397, fig. 485. 1942.

Cells cylindrical with slightly concentrically undulate valves. Specimens from Lake Michigan 5-9 $\mu$  in diameter. Cells always occur singly. Marginal zone narrow, usually less than one-half the radius of the valve. Ornamentation of the marginal zone consists of fine radial striae, without visible substructure, about 18 in 10 $\mu$  at the margin of the valve and a marginal co-

rona of short, stout spines with somewhat expanded bases. The central area of the valve is ornamented with a stellate group of short striae radiating around a central puncta. In occasional specimens the ornamentation of the central area is poorly developed or lacking. In most specimens a distinct, structureless, hyaline space separates the two areas of ornamentation on the valve surface.

With the exception of the marginal spines, the morphologic characteristics of this species are quite similar to *C. stelligera*. The structures of the frustule of *C. pseudostelligera* are somewhat finer and its distribution tends to be more restricted than *C. stelligera*. It is abundant only in eutrophied inshore waters and in estuaries of the main lake.

129 CYPSTELL TC1 NO OF STATICS 156

(46915	CH	20FE1946	0.01707 )	(46523	CH	22NO1946	0.01093 )	(46920	CH	20DE1946	C.00031 )
(46905	CH	JA1947	0.00123 )	(46506	CH	NY1947	0.01394 )	(46907	CH	JL1947	C.00247 )
(46913	CH	6AU1947	0.01046 )	(46922	CH	21AU1947	C.47253 )	(46771	EV	11JN1937	C.00238 )
(46764	EV	17JL1937	0.06446 )	(46757	EV	25JL1937	0.29849 )	(46747	EV	1AU1937	C.01238 )
(46763	EV	23AU1937	C.02029 )	(46765	EV	30AU1937	0.13943 )	(46760	EV	22SE1937	C.02462 )
(46744	EV	6OC1937	0.00488 )	(46767	EV	27OC1937	C.00774 )	(46768	EV	16MR1938	C.01470 )
(46756	EV	27AP1938	0.00504 )	(46759	EV	19MY1938	0.00675 )	(46761	EV	27MY1938	C.00545 )
(1439	B 6	5JN1964	0.01399 )	(1440	B 6	11JL1964	0.03317 )	(1441	B 6	24JL1964	0.01542 )
(1250	C 6	10JL1964	0.00411 )	(1252	C* 1	16JL1964	0.00279 )	(1254	C 2	15JL1964	C.00383 )
(1255	D 5	15JL1964	0.01540 )	(1256	E 2	14JL1964	0.00183 )	(1257	E 3	14JL1964	0.00479 )
(1258	F 1	6JL1964	0.01180 )	(1259	F 2	6JL1964	0.00310 )	(1262	B 3	17AU1964	C.00210 )
(1442	B 6	2AU1964	0.00682 )	(1443	B 6	16AU1964	C.00395 )	(1264	C* 1	10AU1964	C.00193 )
(1265	C* 2	10AU1964	0.01118 )	(1266	C 3	18AU1964	1.47327 )	(1267	D 6	18AU1964	C.00432 )
(1268	E 2	15AU1964	0.21064 )	(1269	E 3	15AU1964	C.04933 )	(1270	F 1	10AU1964	0.02178 )
(1273	C* 2	10SE1964	C.02688 )	(1275	D 2	17SE1964	0.02580 )	(1277	D 4	18SE1964	C.01859 )
(1278	D 6	18SE1964	0.00384 )	(1279	E 1	16SE1964	0.00785 )	(1280	E 2	16SE1964	0.00681 )
(1281	E 3	16SE1964	0.02355 )	(1282	E 4	16SE1964	0.02216 )	(1283	E 5	16SE1964	0.00613 )
(1284	E 6	17SE1964	0.00318 )	(1285	F 1	15SE1964	0.08153 )	(1287	F 3	15SE1964	C.03002 )
(1288	B 3	15OC1964	0.00435 )	(1445	B 6	14OC1964	0.00652 )	(1289	C 7	14OC1964	C.01319 )
(1291	C* 2	16OC1964	0.00489 )	(1292	D 1	15OC1964	C.00745 )	(1293	D 2	15OC1964	C.01415 )
(1295	D 4	15OC1964	0.02973 )	(1296	C 5	14OC1964	0.01180 )	(1297	D 6	14OC1964	0.00381 )
(1298	E 1	12OC1964	0.01346 )	(1299	E 2	12OC1964	0.02199 )	(1300	E 3	13OC1964	C.05012 )
(1301	E 4	13OC1964	0.06182 )	(1302	E 5	13OC1964	0.00810 )	(1304	F 1	11OC1964	0.00741 )
(1305	F 2	11OC1964	0.01380 )	(1306	F 3	11OC1964	0.01386 )	(1307	B 6	NO1964	C.00722 )
(1308	C 7	6NO1964	0.00912 )	(1309	C* 1	10NO1964	0.01126 )	(1310	C* 2	10NO1964	C.02041 )
(1311	D 1	8NO1964	0.00774 )	(1312	D 2	8NO1964	C.02483 )	(1313	D 3	9NO1964	C.02703 )
(1314	D 4	9NO1964	0.01148 )	(1315	D 5	9NO1964	0.01365 )	(1316	D 6	9NO1964	C.01889 )
(1317	E 1	6NO1964	0.01340 )	(1318	E 2	7NO1964	C.02663 )	(1319	E 3	7NO1964	C.08117 )
(1320	E 4	7NO1964	0.15305 )	(1321	E 5	7NO1964	0.04469 )	(1322	E 6	7NO1964	C.01000 )
(1323	F 1	6NO1964	0.01115 )	(1324	F 2	6NO1964	C.01398 )	(1325	F 3	6NO1964	C.00252 )
(1336	C 3	27JA1967	0.00385 )	(1337	C 3	2MR1967	0.00588 )	(1338	C 3	28MR1967	C.00926 )
(1340	C 7	28MR1967	0.01018 )	(1341	A 3	19AP1967	0.00542 )	(1342	A 4	15AP1967	C.00902 )
(1343	A 6	19AP1967	0.00069 )	(1345	C 5	25AP1967	0.00195 )	(1346	C 7	21AP1967	C.22432 )
(1347	F 2	23AP1967	0.00813 )	(1348	E 5	23AP1967	0.01234 )	(1374	E 2	7MY1967	C.00299 )
(1408	A 3	23MY1967	0.00447 )	(1416	E 5	28MY1967	C.01093 )	(1437	E 3	15JN1967	C.00269 )
(1446	A 3	11JL1967	0.00485 )	(1447	A 4	11JL1967	0.00936 )	(1449	C 3	16JL1967	C.11082 )
(1450	C 5	16JL1967	0.29135 )	(1451	C 7	16JL1967	0.00591 )	(1452	E 2	14JL1967	C.07664 )
(1453	E 3	15JL1967	0.01517 )	(1454	E 5	15JL1967	C.01000 )	(1508	C 3	2SE1967	0.00400 )
(1509	C 5	2SE1967	0.00505 )	(1511	E 2	1SE1967	C.04604 )	(1512	E 3	1SE1967	C.01571 )
(1513	E 5	31AU1967	0.00507 )	(1532	A 3	18SE1967	0.00657 )	(1533	A 4	19SE1967	C.00928 )
(1534	A 6	19SE1967	0.00310 )	(1536	E 2	24SE1967	0.01363 )	(1538	E 5	23SE1967	C.01105 )
(1540	C 5	4OC1967	0.00993 )	(1541	E 2	11OC1967	0.06918 )	(1542	E 3	11OC1967	C.04068 )
(1543	E 5	10OC1967	0.02873 )	(1380	GS 4	9MY1967	0.00168 )	(1384	GS 8	10MY1967	C.00185 )
(1394	GS18	13MY1967	0.00172 )	(1555	GS 2	3OC1967	C.01059 )	(1557	GS 4	3OC1967	C.00374 )
(1561	GS 5	4OC1967	0.00587 )	(1562	GS10	5CC1967	0.00247 )	(1573	GS21	6OC1967	C.00112 )
(1544	MU 1	20C1967	0.00715 )	(1547	MS 1	20C1967	0.00798 )	(1521	SH 1	18SE1967	C.00577 )
(1522	BH 1	18SE1967	0.11670 )	(1523	RA 1	19SE1967	0.13838 )	(1526	MO 1	20SE1967	C.00569 )
(1529	KW 1	20SE1967	0.02398 )	(1545	WL 1	20C1967	C.02027 )	(1549	MQ 1	4OC1967	C.06852 )
(1551	ES 1	5OC1967	0.00799 )	(1552	SM 1	6OC1967	0.00660 )	(1550	MR 1	5OC1967	0.44604 )
(1528	MU 2	29MY1967	0.01507 )	(1426	MS 2	29MY1967	0.02100 )	(1351	MI 2	21AP1967	0.02483 )
(1417	HO 2	22MY1967	0.71781 )	(1350	3H 2	19AP1967	0.25770 )	(1400	SB 2	6MY1967	C.20848 )
(1352	KW 2	21AP1967	0.02577 )	(1403	CA 2	10MY1967	C.03923 )	(1349	CI 2	19AP1967	C.00359 )

*Cyclotella stelligera* (Cleve and Grun.) V. H.

*Cyclotella meneghiniana* var.? *stelligera* Cleve and Grun., Kongl. Sven. Vet.-Akad. Handl., 18(5):22, pl. 5, fig. 63. 1881.

*Cyclotella stelligera* (Cleve and Grun.) V. H., Syn. Diat. Belgique, pl. 94, fig. 22-27. 1882.

Cells cylindrical with slightly concentrically undulate valves. Cells always occur singly. Specimens from Lake Michigan 3-24 $\mu$  in diameter. Marginal zone narrow, only about one-fourth the radius of the valve. Ornamentation of the marginal zone composed of striae without visible substructure. Striae quite coarse, about 11-14 in 10 $\mu$ , all of approximately equal length. Other structures, such as ribs, chambers, or slime pores are lacking. Ornamentation of the central area is quite variable. Usually a single large puncta is present in the center of the valve. A number of irregular ribs radiate around the center giving a stellate central structure. Smaller, isolated puncta or thickenings may occur between the major structures. In the smaller cells this entire central ornamentation is reduced to a stellate cluster of dots. In some specimens the entire central area is covered by very fine puncta which may be either radially or randomly distributed.

130 CYSTELLA ICT. NO. OF STATIONS 124

(46973	CH	1876	0.11809 )	( 3541	CH	23NO1945	0.01229 )	(46908	CH	19FE1881	C.01132 )
(46910	CH	OC1945	0.02294 )	(46921	CH	20FE1946	0.15364 )	(46914	CH	DE1945	C.04028 )
(46917	CH	12JA1946	0.00582 )	(46915	CH	22NO1946	0.06775 )	(46920	CH	19AP1946	C.01815 )
(46924	CH	10MY1946	0.00564 )	(46923	CH	MR1947	0.07286 )	(46912	CH	20DE1946	C.00893 )
(46905	CH	JA1947	0.02206 )	(46909	CH	MY1947	0.04779 )	(46919	CH	AP1947	C.01150 )
(46916	CH	4MY1947	0.00238 )	(46906	CH	21AU1947	8.91503 )	(46758	EV	5JN1947	C.12291 )
(46907	CH	JL1947	0.00296 )	(46922	CH	25JL1937	0.08184 )	(46747	EV	5JN1937	C.01070 )
(46764	EV	17JL1937	0.02417 )	(46757	EV	30AU1937	0.68600 )	(46769	EV	1AU1937	C.21784 )
(46763	EV	23AU1937	0.71023 )	(46765	EV	22SE1937	0.03939 )	(46750	EV	7SE1937	C.06513 )
(46752	EV	15SE1937	0.10884 )	(46760	EV	27OC1937	0.01160 )	(46749	EV	24SE1937	C.06127 )
(46744	EV	6OC1937	0.10730 )	(46762	EV	18MR1938	C.22056 )	(46756	EV	12MR1938	C.07282 )
(46768	EV	16MR1938	0.04410 )	(46761	EV	27MY1938	0.00818 )	( 1226	C 7	27AP1938	C.00336 )
(46759	EV	19MY1938	0.00338 )	( 1228	D 2	14MY1964	0.00779 )	( 1231	E 3	16MY1964	C.00381 )
( 1228	D 2	14MY1964	0.00779 )	( 1229	D 5	14MY1964	0.00423 )	( 1231	E 3	16MY1964	C.01223 )
( 1232	E 5	16MY1964	0.00174 )	( 1236	C* 1	8JN1964	0.00175 )	( 1237	C* 2	8JN1964	C.00258 )
( 1250	C 6	10JL1964	0.00822 )	( 1255	D 5	15JL1964	0.00513 )	( 1256	E 2	14JL1964	C.00183 )
( 1257	E 3	14JL1964	0.00957 )	( 1258	F 1	6JL1964	0.00236 )	( 1260	F 3	6JL1964	C.00955 )
( 1265	C* 2	10AU1964	0.00224 )	( 1444	B 6	19SE1964	0.02122 )	( 1272	C* 1	10SE1964	C.05336 )
( 1273	C* 2	10SE1964	0.01613 )	( 1275	D 2	17SE1964	0.01290 )	( 1276	D 3	18SE1964	C.01118 )
( 1279	E 1	16SE1964	0.01571 )	( 1280	E 2	16SE1964	0.00681 )	( 1286	F 2	15SE1964	C.02189 )
( 1287	F 3	15SE1964	0.02502 )	( 1445	B 6	14OC1964	0.00326 )	( 1338	C 3	28MR1967	C.00529 )
( 1339	C 5	28MR1967	0.00312 )	( 1340	C 7	28MR1967	0.00145 )	( 1342	A 4	19AP1967	C.00361 )
( 1343	A 6	19AP1967	0.00139 )	( 1344	C 3	25AP1967	0.00331 )	( 1346	C 7	21AP1967	C.00668 )
( 1347	E 2	23AP1967	0.00325 )	( 1348	E 5	23AP1967	0.00685 )	( 1373	C 7	5MY1967	C.00285 )
( 1374	E 2	7MY1967	0.00598 )	( 1376	E 5	6MY1967	C.00281 )	( 1408	A 3	23MY1967	C.00447 )
( 1433	C 3	17JN1967	0.00646 )	( 1446	A 3	11JL1967	0.00245 )	( 1447	A 4	11JL1967	C.01170 )
( 1449	C 3	16JL1967	0.00764 )	( 1450	C 5	16JL1967	0.00190 )	( 1451	C 7	16JL1967	C.00591 )
( 1452	E 2	14JL1967	0.01490 )	( 1453	E 3	15JL1967	0.01264 )	( 1454	E 5	15JL1967	C.00400 )
( 1504	A 3	28AU1967	0.00247 )	( 1509	C 5	2SE1967	0.00505 )	( 1511	E 2	1SE1967	C.01535 )
( 1512	E 3	1SE1967	0.01178 )	( 1513	E 5	31AU1967	0.00507 )	( 1532	A 3	18SE1967	C.00986 )
( 1533	A 4	19SE1967	0.00464 )	( 1539	C 3	4OC1967	0.01510 )	( 1541	E 2	11OC1967	C.01064 )
( 1542	E 3	11OC1967	C.01017 )	( 1543	E 5	10OC1967	0.00718 )	( 1382	GS 6	10MY1967	C.00278 )
( 1383	GS 7	10MY1967	C.00267 )	( 1554	GS 1	3OC1967	0.00712 )	( 1555	GS 2	3OC1967	C.00353 )
( 1556	GS 3	3OC1967	0.01564 )	( 1558	GS 5	4OC1967	C.00396 )	( 1559	GS 7	4OC1967	C.01049 )
( 1560	GS 8	4OC1967	0.00472 )	( 1562	GS10	5OC1967	0.00740 )	( 1570	GS18	5OC1967	C.00992 )
( 1571	GS19	6OC1967	0.00059 )	( 1574	GS22	6OC1967	0.00575 )	( 1524	MI 1	20SE1967	C.02189 )
( 1546	LU 1	2OC1967	0.01000 )	( 1527	TR 1	20SE1967	0.01258 )	( 1545	WL 1	2OC1967	C.00676 )
( 1550	MR 1	5OC1967	0.06195 )	( 1351	MI 2	21AP1967	0.02793 )	( 1399	PW 2	5MY1967	C.01360 )
( 1400	SB 2	6MY1967	0.01191 )	( 1352	KW 2	21AP1967	0.06013 )	( 1403	CA 2	10MY1967	C.03923 )
( 1404	MQ 2	10MY1967	0.01270 )	( 1405	ES 2	12MY1967	0.00645 )	( 1349	CI 2	19AP1967	C.00718 )
( 1423	WA 2	25MY1967	0.00428 )	(							

*Cyclotella temperei* M. Per. and Hérib.

*Cyclotella temperei* M. Peragallo and Héribaud in: Héribaud, Foss. Diat. Auvergne, Vol. I, p. 35, pl. 8, fig. 23. 1902.

Cells cylindrical, surface of the valves flat or only slightly concave. Cells occur singly. Specimens from Lake Michigan 8-12 $\mu$  in diameter. Marginal zone of the valves very broad about three-fourths the diameter of the valve. Ornamentation of the marginal zone consists of anastomosing striae of varying length, somewhat sinuous and without visible substructure. The longest of the striae are of equal length, forming an even border to the central area. A series of marginal spines are present. Striae 14-18 in 10 $\mu$  at the margin of the valve. Spines widely but regularly spaced, about 4 in 10 $\mu$ . The central area is small and circular. Its only ornamentation is a rosette of quite small but conspicuous puncta surrounding the center of the valve.

Specimens of this species are very rare in collections from Lake Michigan. It was originally described from fossil material and it is entirely possible that the specimens we have observed are not of recent origin. It is also possible that this species belongs to the group of "pleistocene relicts" that survive in benthic communities in relatively deep water in the upper Great Lakes. The only other taxon found in Lake Michigan that resembles *C. temperei* in morphology is *C. wolterecki* Hust. Although Hustedt (1942) points this out in his discussion of *C. wolterecki*, he does not allude to *Cladogramma cebuense* Grun., which, although larger and more coarsely structured, is remarkably similar to the two entities discussed above in structure and which, like *C. wolterecki*, was described from the western Pacific Islands.

132 CYTEMPER TCT NO OF STATIONS 7											
( 1544	MU 1	20C1967	0.00238 )	( 1522	BH 1	18SE1967	1.60464 )	( 1550	MR 1	50C1967	0.39648 )
( 1350	BH 2	19AP1967	1.23345 )	( 1400	SB 2	6MY1967	0.00596 )	( 1353	FR 2	23AP1967	0.01055 )
( 1422	GA 2	23MY1967	0.00311 )	(							

### *Cyclotella wolterecki* Hust.

*Cyclotella wolterecki* Hustedt, Internat. Rev. Hydrobiol., 42:16, text fig. 11-13. 1942.

Cells cylindrical with slightly concentrically undulate valves, usually sunken in the center. Cells occur singly. Specimens from Lake Michigan 4-9 $\mu$  in diameter. The main visible ornamentation on the valve surface is a series of radiate striae of varying lengths and without visible substructure. The longest of these striae reach nearly to the center of the valve so that the central area is reduced to a small, circular area only 1-2 $\mu$  in diameter. This area usually contains a single, large puncta. The striae are fine, about 22 in 10 $\mu$  at the margin of the valve, and somewhat difficult to resolve to the thinness of the valve and to their highly irregular length. A series of more or less well developed spines, with thickened and expanded bases, are usually visible at the margin of the valves. The spines are randomly arranged and appear to have no special orientation to the striae or to one another.

This species, like *C. atomus* Hust., was originally described from the tropics. Although this distribution is quite unusual, the forms from Lake Michigan appear to be morphologically identical with the specimens described and figured by Hustedt (l. c.). Indeed the morphology of this taxon is almost unique. The only species that resembles it in general structure of the valve and arrangement of ornamentation is *C. temperei*, which, according to published descriptions and illustrations, is a considerably larger and more coarsely structured form.

133 CYWOLTER TCT NO OF STATIONS 4											
( 1243	E 6	13JN1964	0.00418 )	( 1446	A 3	11JL1967	0.00245 )	( 1557	ES 4	30C1967	0.00374 )
( 1550	MR 1	50C1967	0.01239 )	(							

### Species *incertae sedis*

#### *Cyclotella* sp. #1.

134 CYSPECOA TCT NO OF STATIONS 1											
( 1245	F 2	11JN1964	0.00692 )	(							

*Cyclotella* sp. #2.

135 CYSPECDB TOT NO OF STATIONS 10											
( 1284	E 6	17SE1964	0.00953 )	( 1285	F 1	15SE1964	0.01165 )	( 1320	E 4	7NO1964	0.00827 )
( 1321	E 5	7NO1964	0.00638 )	( 1322	E 6	7NO1964	0.01666 )	( 1323	F 1	6NO1964	0.00279 )
( 1324	F 2	6NO1964	0.01165 )	( 1325	F 3	6NO1964	0.00504 )	( 1536	E 2	24SE1967	0.00273 )
( 1541	E 2	11OC1967	0.01597 )	(							

*Cyclotella* sp. (aff. *C. striata* var. *bipunctata* Fricke).

131 CYSRIVB TOT NO OF STATIONS 3											
( 1240	D 6	10JN1964	0.00920 )	( 1243	E 6	13JN1964	0.00209 )	( 1504	A 3	28AU1967	0.00247 )



Genus *Cymatopleura* Wm. Smith  
Wm. Smith, Annals Mag. Nat. Hist., 7(2):13. 1851.

Freshwater members of the genus *Cymatopleura* find their primary habitat in epipelagic communities. They are, however, also successful facultative plankton and occur in low to moderate numbers in plankton collections.

*Cymatopleura cochlea* J. Brun.

*Cymatopleura cochlea* J. Brun, Mem. Soc. Phys. Hist. Nat. Geneve, 31:25, pl. 276, fig. 6. 1911.

136 CICOCHLE TCT NO OF STATIONS 16

( 3541 )	CH	1FE1881	0.01956 )	( 46517 )	CH	12JA1946	0.00055 )	( 46914 )	CH	19AP1946	C.00107 )
( 46916 )	CH	4MY1947	0.00034 )	( 46522 )	CH	21AU1947	0.00194 )	( 46764 )	EV	17JL1937	C.CC806 )
( 46763 )	EV	23AU1937	C.02029 )	( 46752 )	EV	15SE1937	C.02177 )	( 46767 )	EV	27OC1937	C.CC387 )
( 46762 )	EV	18MR1938	0.08822 )	( 1391 )	GS15	12MY1967	0.00479 )	( 1394 )	GS16	13MY1967	C.CC172 )
( 1395 )	GS19	13MY1967	0.00117 )	( 1396 )	GS20	13MY1967	C.00074 )	( 1568 )	GS16	5OC1967	C.CC433 )
( 1569 )	GS17	5OC1967	0.00149 )	(							

*Cymatopleura elliptica* (Bréb. and Godey) Wm. Smith

*Surirella elliptica* de Brébisson and Godey, Consid. Diat., p. 17. 1838.

*Cymatopleura elliptica* (Bréb. and Godey) Wm. Smith, Annals Mag. Nat. Hist., Ser. 2, 7:13, pl. 7, fig. 10-11. 1851.

137 CTELLIPT TCT NO OF STATIONS 5

( 46758 )	EV	5JN1937	0.00357 )	( 46743 )	EV	20JN1937	C.00856 )	( 46757 )	EV	25JL1937	C.CC481 )
( 46747 )	EV	1AU1937	0.00495 )	( 46765 )	EV	30AU1937	0.00558 )	(			

*Cymatopleura solea* (Bréb. and Godey) Wm. Smith

*Cymbella solea* de Brébisson and Godey, Mem. Soc. Acad. Sci. Falaise, 1:51, pl. 7. 1835.

*Cymatopleura solea* (Bréb. and Godey) Wm. Smith, Annals Mag. Nat. Hist., Ser. 2, 7:12, pl. 3, figs. 8-9. 1851.

138 CTSOLEA TCT NO OF STATIONS 144

( 160973 )	CH	1876	0.04724 )	( 3540 )	CH	11MY1875	0.00932 )	( 3541 )	CH	1FE1881	C.26411 )
( 3507 )	CH	19FE1881	0.02264 )	( 46910 )	CH	0C1945	0.00546 )	( 46921 )	CH	23NO1945	C.04204 )
( 46917 )	CH	12JA1946	0.01275 )	( 46514 )	CH	19AP1946	C.03097 )	( 46924 )	CH	10MY1946	0.22927 )
( 46923 )	CH	22NO1946	0.15736 )	( 46520 )	CH	20DE1946	0.01232 )	( 46905 )	CH	JA1947	C.01103 )
( 46909 )	CH	MR1947	0.02277 )	( 46916 )	CH	4MY1947	0.01561 )	( 46906 )	CH	MY1947	C.01062 )
( 46919 )	CH	5JN1947	0.01214 )	( 46907 )	CH	JL1947	0.05375 )	( 46922 )	CH	21AU1947	C.01163 )
( 46758 )	EV	5JN1937	0.03923 )	( 46743 )	EV	20JN1937	0.05138 )	( 46745 )	EV	3JL1937	C.08359 )
( 46764 )	EV	17JL1937	0.05641 )	( 46757 )	EV	25JL1937	0.03852 )	( 46747 )	EV	1AU1937	C.CC228 )
( 46765 )	EV	30AU1937	0.01673 )	( 46752 )	EV	15SE1937	0.02177 )	( 46760 )	EV	22SE1937	C.00985 )
( 46750 )	EV	24SE1937	0.01414 )	( 46744 )	EV	6OC1937	0.00975 )	( 46748 )	EV	13OC1937	C.06405 )
( 46767 )	EV	27OC1937	0.00774 )	( 46749 )	EV	12MR1938	0.01214 )	( 46768 )	EV	16MR1938	C.C1470 )
( 46762 )	EV	18MR1938	0.08822 )	( 46751 )	EV	30MR1938	0.02233 )	( 46756 )	EV	27AP1938	C.00504 )
( 46759 )	EV	19MY1938	0.00675 )	( 46761 )	EV	27MY1938	0.03543 )	( 46766 )	EV	14OE1938	C.C3169 )
( 1225 )	C 6	15MY1964	0.00392 )	( 1228 )	D 2	14MY1964	0.00584 )	( 1229 )	D 5	14MY1964	C.CC423 )
( 1230 )	E 2	16MY1964	0.00593 )	( 1231 )	E 3	16MY1964	C.01223 )	( 1232 )	E 5	16MY1964	C.C01391 )
( 1233 )	B 3	5JN2964	C.00238 )	( 1439 )	B 6	5JN1964	0.00200 )	( 1237 )	C* 2	8JN1964	C.CC516 )
( 1238 )	D 3	11JN1964	0.00400 )	( 1241 )	E 2	13JN1964	C.00148 )	( 1242 )	E 3	13JN1964	C.CC300 )
( 1243 )	E 6	13JN1964	0.00209 )	( 1244 )	F 1	11JN1964	0.00439 )	( 1245 )	F 2	11JN1964	C.C01037 )
( 1246 )	F 3	11JN1964	C.01195 )	( 1248 )	B 3	24JL1964	C.00197 )	( 1252 )	C* 1	16JL1964	C.CC558 )
( 1254 )	D 2	15JL1964	0.00383 )	( 1257 )	E 3	14JL1964	C.00239 )	( 1259 )	F 2	6JL1964	C.CC310 )
( 1260 )	F 3	6JL1964	0.00191 )	( 1269 )	E 3	15AU1964	0.00274 )	( 1285 )	F 1	15SE1964	C.CC582 )
( 1304 )	F 1	11OC1964	0.00741 )	( 1307 )	B 6	NO1964	C.00361 )	( 1313 )	D 3	9NO1964	C.CC193 )
( 1323 )	F 1	6NO1964	0.00139 )	( 1325 )	F 3	6NO1964	C.00252 )	( 1328 )	C 3	28MR1967	0.00397 )
( 1339 )	C 5	28MR1967	0.00624 )	( 1340 )	C 7	28MR1967	0.00073 )	( 1342 )	A 4	19AP1967	C.CC180 )
( 1343 )	A 6	19AP1967	0.00486 )	( 1344 )	C 3	25AP1967	C.00165 )	( 1345 )	C 5	25AP1967	C.C01170 )
( 1346 )	C 7	21AP1967	0.00134 )	( 1347 )	E 2	23AP1967	0.00325 )	( 1348 )	E 5	23AP1967	C.C00137 )
( 1368 )	A 3	4MY1967	C.02828 )	( 1370 )	A 6	3MY1967	0.01381 )	( 1371 )	C 3	4MY1967	C.CC693 )
( 1372 )	C 5	5MY1967	0.01419 )	( 1373 )	C 7	5MY1967	C.00856 )	( 1374 )	E 2	7MY1967	C.CC598 )
( 1375 )	E 3	7MY1967	0.01203 )	( 1376 )	E 5	6MY1967	C.00281 )	( 1410 )	A 6	24MY1967	C.C01691 )
( 1411 )	C 3	31MY1967	0.00410 )	( 1412 )	C 5	31MY1967	C.00842 )	( 1413 )	C 7	25MY1967	C.CC632 )
( 1414 )	E 2	28MY1967	0.00336 )	( 1416 )	E 5	28MY1967	0.00219 )	( 1432 )	A 4	13JN1967	C.CC0255 )
( 1433 )	C 3	17JN1967	0.00646 )	( 1434 )	C 5	17JN1967	0.00598 )	( 1436 )	E 2	15JN1967	C.CC724 )
( 1437 )	E 3	15JN1967	0.00538 )	( 1448 )	A 6	10JL1967	0.00354 )	( 1449 )	C 3	16JL1967	C.CC0382 )
( 1453 )	E 3	15JL1967	0.00253 )	( 1511 )	E 2	1SE1967	0.00307 )	( 1379 )	GS 3	9MY1967	C.CC0309 )
( 1380 )	GS 4	9MY1967	0.00336 )	( 1381 )	GS 5	10MY1967	0.00239 )	( 1382 )	GS 6	10MY1967	C.CC0278 )
( 1384 )	GS 8	10MY1967	0.00924 )	( 1387 )	GS11	12MY1967	0.01188 )	( 1388 )	GS12	12MY1967	C.C14480 )
( 1389 )	GS13	12MY1967	0.01289 )	( 1350 )	GS14	12MY1967	0.02349 )	( 1391 )	GS15	12MY1967	C.CC4310 )

( 1392	GS16	12MY1967	0.01233 )	( 1393	GS17	13MY1967	0.02192 )	( 1394	GS18	13MY1967	C.08429 )
( 1395	GS19	13MY1967	0.02114 )	( 1396	GS20	13MY1967	C.00074 )	( 1397	GS21	13MY1967	C.00327 )
( 1566	GS14	50C1967	0.00367 )	( 1567	GS15	50C1967	C.00635 )	( 1568	GS16	50C1967	C.00144 )
( 1569	GS17	50C1967	0.01338 )	( 1570	GS18	50C1967	C.00992 )	( 1572	GS20	60C1967	C.00090 )
( 1575	GS28	60C1967	0.00516 )	( 1546	LU 1	20C1967	C.00500 )	( 1520	FO 1	18SE1967	C.00471 )
( 1552	SM 1	60C1967	0.01981 )	( 1553	SG 1	60C1967	C.00734 )	( 1428	PU 2	29MY1967	C.00301 )
( 1426	MS 2	29MY1967	0.05249 )	( 1351	MI 2	21AP1967	C.00621 )	( 1417	FO 2	22MY1967	C.01495 )
( 1350	BH 2	19AP1967	0.00661 )	( 1401	MC 2	6MY1967	0.01176 )	( 1402	TR 2	6MY1967	C.01083 )
( 1400	SB 2	6MY1967	0.02383 )	( 1354	GH 2	25AP1967	0.00173 )	( 1429	WL 2	29MY1967	C.01062 )
( 1403	CA 2	10MY1967	0.02615 )	( 1349	CI 2	19AP1967	0.00359 )	( 1419	BU 2	23MY1967	C.05492 )
( 1422	GA 2	23MY1967	0.02555 )	( 1423	WA 2	25MY1967	0.01713 )	( 1424	KN 2	25MY1967	0.01332 )

*Cymatopleura solea* var. *apiculata* (Wm. Smith) Ralfs

*Cymatopleura apiculata* Wm. Smith, Syn. British Diat., Vol. 1, p. 37, pl. 10, fig. 79. 1853.

*Cymatopleura solea* var. *apiculata* (Wm. Smith) Ralfs in: Pritchard, Hist. Infus., p. 793. 1861.

139 CTSOLEVA TCT NC CF STA ICNS 39											
(60973	CH	1876	0.04724 )	( 3541	CH	1FE1881	C.00578 )	(46921	CH	23NC1945	C.00065 )
(46917	CH	12JA1946	0.00083 )	(46914	CH	19AP1946	0.00107 )	(46924	CH	10MY1946	0.00282 )
(46905	CH	JA1947	0.00123 )	(46916	CH	4MY1947	0.00136 )	(46907	CH	JL1947	C.00247 )
(46922	CH	21AU1947	C.00048 )	(46758	EV	5JN1937	C.01070 )	(46743	EV	20JN1937	0.00856 )
(46744	EV	60C1937	0.00975 )	(46749	EV	12MR1938	C.01214 )	(46751	EV	30MR1938	C.02233 )
(46759	EV	19MY1938	0.00675 )	( 1230	E 2	16MY1964	0.00296 )	( 1289	C 7	140C1964	0.00440 )
( 1343	A 6	19AP1967	0.00069 )	( 1345	C 5	25AP1967	C.00195 )	( 1376	E 5	6MY1967	C.00281 )
( 1408	A 3	23MY1967	0.00894 )	( 1414	E 2	28MY1967	0.00672 )	( 1415	E 3	28MY1967	C.00450 )
( 1432	A 4	13JN1967	0.00255 )	( 1434	C 5	17JN1967	0.00299 )	( 1435	C 7	13JN1967	C.00316 )
( 1377	GS 1	5MY1967	0.00396 )	( 1381	GS 5	10MY1967	0.00239 )	( 1386	GS10	12MY1967	C.00287 )
( 1388	GS12	12MY1967	0.00603 )	( 1390	GS14	12MY1967	0.00587 )	( 1391	GS15	12MY1967	C.00958 )
( 1394	GS18	13MY1967	0.00172 )	( 1573	GS21	60C1967	C.00112 )	( 1550	MR 1	50C1967	C.01239 )
( 1399	PH 2	5MY1967	0.01360 )	( 1401	MG 2	6MY1967	0.00588 )	( 1422	GA 2	23MY1967	C.00511 )

*Cymatopleura solea* var. *clavata* O. Müll.

*Cymatopleura solea* var. *clavata* O. Müller, Bot. Jahrb., 34(1):22, fig. 1. 1903.

140 CTSOLEVC TCT NO OF STATIONS 1			
(46747	EV	1AU1937	0.00248 )

*Cymatopleura solea* var. *regula* (Ehr.) Grun.

*Surirella regula* Ehrenberg, Ber. Akad. Wiss. Berlin, 1841:136. 1841.

*Cymatopleura regula* Ralfs in: Pritchard, Hist. Infus., p. 793. 1861.

*Cymatopleura solea* var. *regula* (Ehr.) Grunow, Verh. Zool.-Bot. Ges. Wien, 12:466. 1862.

141 CTSOLEVR TCT NC CF STATIONS 6											
(60973	CH	1876	0.11809 )	( 3541	CH	1FE1881	C.00578 )	(46914	CH	19AP1946	C.00107 )
(46919	CH	5JN1947	0.00303 )	(46907	CH	JL1947	0.00197 )	(46922	CH	21AU1947	C.00048 )

Genus *Cymbella* Agardh  
Agardh, Consp. Crit. Diat., p. 1. 1830.

Members of the genus *Cymbella* find their primary habitat in periphyton or epipelagic communities. The specimens that occur in our collections are most likely derived from such habitats in most instances.

*Cymbella acutiuscula* Cleve

*Cymbella acutiuscula* Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2): 164, pl. 4, fig. 26. 1894.

Coll: 1404.

*Cymbella aequalis* Wm. Smith.

*Cymbella aequalis* Wm. Smith in: Greville, Annals Mag. Nat. Hist., Ser. 2, 16:255, pl. 9, fig. 4. 1855.

185 CBSPECCE TCT NC CF STATIONS 2									
(46917	CH	12JA1946	0.00028 )	( 1258	F 1	6JL1964	0.00236 )	(	

*Cymbella affinis* Kütz.

*Cymbella affinis* Kützing, Bacill., p. 80, pl. 6, fig. 15. 1844.

142 CBAFFINI TCT NC CF STATIONS 35									
(46917	CH	12JA1946	0.00028 )	(46524	CH	10MY1946	C.00071 )	(46906	CH
(46919	CH	5JN1947	0.00152 )	(46922	CH	21AU1947	C.00048 )	(46758	EV
(46743	EV	20JN1937	0.00428 )	(46764	EV	17JL1937	C.00806 )	(46757	EV
(46763	EV	23AU1937	0.02029 )	(46769	EV	7SE1937	0.02171 )	(46760	EV
(46750	EV	24SE1937	C.00943 )	( 1229	D 5	14MY1964	0.00211 )	( 1240	D 6
( 1244	F 1	11JN1964	C.00110 )	( 1245	F 2	11JN1964	0.00346 )	( 1256	E 2
( 1270	F 1	10AU1964	0.00545 )	( 1279	E 1	16SE1964	0.00785 )	( 1287	F 3
( 1346	C 7	21AP1967	0.00134 )	( 1388	GS12	12MY1967	0.02413 )	( 1389	GS13
( 1392	GS16	12MY1967	0.00616 )	( 1565	GS13	50C1967	C.01014 )	( 1567	GS15
( 1569	GS17	50C1967	0.00297 )	( 1571	GS19	60C1967	C.00176 )	( 1574	GS22
( 1350	BH 2	19AP1967	0.00881 )	( 1401	MD 2	6MY1967	C.00588 )	( 1403	CA 2
( 1407	SM 2	14MY1967	C.00597 )	( 1406	GB 2	13MY1967	0.00270 )	(	

*Cymbella amphicephala* Naeg. ex Kütz.

*Cymbella amphicephala* Naegli ex Kützing, Sp. Alg., p. 890. 1849.

143 CBAMPHIC TCT NC CF STATIONS 3									
(46764	EV	17JL1937	C.00806 )	( 1389	GS13	12MY1967	C.00258 )	( 1530	FR 1
								24SE1967	C.01000 )

*Cymbella angustata* (Wm. Smith) Cleve

*Navicula angustata* Wm. Smith, Syn. British Diat., Vol. I, p. 52, pl. 17, fig. 156. 1853.

*Cymbella angustata* (Wm. Smith) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):161. 1895.

144 CBANGUST TCT NC CF STATIONS 3									
(46764	EV	17JL1937	C.00806 )	(46757	EV	25JL1937	0.00481 )	(46747	EV
								1AU1937	C.00248 )

*Cymbella aspera* (Ehr.) Hérib.

*Cocconema asperum* Ehrenberg, Ber. Akad. Wiss. Berlin, 1839:30. 1839.

*Cymbella aspera* Héribaud, Diat. Auvergne, p. 99, pl. 3, fig. 10. 1893.

145 CBASPERA TCT NC CF STATIONS 3									
( 1512	E 3	1SE1967	0.00393 )	( 1350	GS14	12MY1967	C.00587 )	( 1404	MC 2
								10MY1967	C.01270 )

*Cymbella cesatii* Grun.

*Cymbella cesatii* Grunow in: A. Schmidt, Atlas Diat., pl. 71, figs. 48-49. 1881.

## 146 CBCESATI TCT NO OF STATIONS 14

(46919	CH	5JN1947	0.00455 )	( 1244	F 1	11JN1964	0.00219 )	( 1245	F 2	11JN1964	0.00346 )
( 1246	F 3	11JN1964	0.00598 )	( 1258	F 1	6JL1964	0.00708 )	( 1259	F 2	6JL1964	0.00310 )
( 1260	F 3	6JL1964	0.00191 )	( 1285	F 1	15SE1964	0.02330 )	( 1305	F 2	11OC1964	0.00173 )
( 1388	GS12	12MY1967	0.00603 )	( 1350	GS14	12MY1967	0.00587 )	( 1394	GS18	13MY1967	0.00172 )
( 1403	CA 2	10MY1967	0.03923 )	( 1404	MC 2	10MY1967	0.02541 )	(			

*Cymbella cistula* (Ehr.) Kirchn.

*Bacillaria cistula* Ehrenberg in: Ehrenberg and Hemprich, Symbolae physicae, Vol. 4, pl. 2(4), fig. 10. 1828.

*Cymbella cistula* (Ehr.) Kirchner in: Cohn, Kryptog.-Fl. Schlesien, Vol. 2, p. 189. 1878.

## 147 CBCISTUL TCT NO OF STATIONS 43

(46921	CH	23NO1945	0.00065 )	(46917	CH	12JA1946	0.00055 )	(46914	CH	19AF1946	0.00107 )
(46920	CH	20DE1946	0.00092 )	(46916	CH	4MY1947	0.00034 )	(46906	CH	MY1947	0.00066 )
(46919	CH	5JN1947	0.02580 )	(46913	CH	6AU1947	0.02092 )	(46922	CH	21AU1947	0.00097 )
(46764	EV	17JL1937	0.01612 )	(46757	EV	25JL1937	0.00963 )	(46747	EV	1AU1937	0.00248 )
(46765	EV	30AU1937	0.00558 )	( 1244	F 1	11JN1964	0.00219 )	( 1258	F 1	6JL1964	0.00472 )
( 1268	F 2	15AU1964	0.00274 )	( 1270	F 1	10AU1964	0.00272 )	( 1285	F 1	15SE1964	0.04077 )
( 1302	E 5	13OC1964	0.00405 )	( 1382	GS 6	10MY1967	0.00833 )	( 1386	GS10	12MY1967	0.00287 )
( 1387	GS11	12MY1967	0.00792 )	( 1388	GS12	12MY1967	0.00603 )	( 1389	GS13	12MY1967	0.00258 )
( 1392	GS16	12MY1967	0.00616 )	( 1396	GS20	13MY1967	0.00074 )	( 1554	GS 1	30C1967	0.00356 )
( 1557	GS 4	30C1967	0.00374 )	( 1567	GS15	50C1967	0.00159 )	( 1569	GS17	50C1967	0.00446 )
( 1574	GS22	60C1967	0.01438 )	( 1524	MI 1	20SE1967	0.02189 )	( 1529	KW 1	20SE1967	0.01199 )
( 1530	FR 1	24SE1967	0.02000 )	( 1550	MR 1	50C1967	0.02478 )	( 1553	SG 1	60C1967	0.01469 )
( 1426	MS 2	29MY1967	0.02100 )	( 1350	BH 2	19AP1967	0.00220 )	( 1403	CA 2	10MY1967	0.27462 )
( 1404	MC 2	10MY1967	0.02541 )	( 1405	ES 2	12MY1967	0.00645 )	( 1349	CI 2	19AP1967	0.00359 )
( 1406	GB 2	13MY1967	0.00270 )	(							

*Cymbella cistula* var. *gibbosa* J. Brun

*Cymbella cistula* var. *gibbosa* J. Brun, Diatomiste, Vol. 2, pl. 14, fig. 27. 1895.

## 148 CBCISTVC TCT NO OF STATIONS 7

( 1240	D 6	10JN1964	0.00153 )	( 1285	F 1	15SE1964	0.01165 )	( 1379	GS 3	9MY1967	0.00306 )
( 1387	GS11	12MY1967	0.01584 )	( 1566	GS14	50C1967	0.00183 )	( 1526	MO 1	20SE1967	0.00569 )
( 1403	CA 2	10MY1967	0.28765 )	(							

*Cymbella cistula* var. *truncata* J. Brun.

*Cymbella cistula* var. *truncata* J. Brun, Diat. Alps et Jura, p. 58, pl. 3, fig. 2. 1880.

## 149 CBCISTVT TCT NO OF STATIONS 1

( 1403	CA 2	10MY1967	0.02615 )	(							
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*Cymbella cuspidata* Kütz.

*Cymbella cuspidata* Kützing, Bacill., p. 79, pl. 3, fig. 40. 1844.

## 150 CBCUSPID TOT NO OF STATIONS 14

(46917	CH	12JA1946	0.00055 )	(46914	CH	19AP1946	0.00107 )	(46758	EV	5JN1937	0.00357 )
(46764	EV	17JL1937	0.00806 )	(46757	EV	25JL1937	0.00963 )	(46747	EV	1AU1937	0.00248 )
(46769	EV	7SE1937	0.02171 )	(46751	EV	30MR1938	0.02233 )	(46759	EV	19MY1938	0.00338 )
(46761	EV	27MY1938	0.00273 )	( 1574	GS22	60C1967	0.00575 )	( 1527	TR 1	20SE1967	0.00629 )
( 1427	LU 2	29MY1967	0.01211 )	( 1350	BH 2	19AP1967	0.00220 )	(			

*Cymbella cuspidata* var. *schulzii* A. Cleve

*Cymbella cuspidata* var. *schulzii* A. Cleve, Soc. Sci. Fennica Comm. Biol., 4(14):75. 1934.

152 CBCUSPVS TOT NO CF STATIONS 1				
( 1392	GS16	12MY1967	0.00308	) (

*Cymbella delicatula* Klitz.

*Cymbella delicatula* Klitzing, Sp. Alg., p. 59. 1849.

153 CBOELICA TCT NO CF STATIONS 41														
(46914	CH	19AP1946	0.00107	)	(46920	CH	20DE1946	C.00062	)	(46916	CH	4MY1947	C.02205	)
(46919	CH	5JUN1947	1.28222	)	(46907	CH	1JL1947	C.00099	)	(46922	CH	21AU1947	C.00145	)
(46758	EV	5JUN1937	0.00713	)	(46743	EV	20JUN1937	0.00428	)	(46770	EV	9JL1937	C.01193	)
(46764	EV	17JL1937	0.04835	)	(46757	EV	25JL1937	C.02407	)	(46747	EV	1AU1937	C.00248	)
(46763	EV	23AU1937	0.10146	)	(46752	EV	15SE1937	0.06530	)	(46748	EV	13OC1937	C.02135	)
(46768	EV	16MR1938	0.01470	)	(46762	EV	18MR1938	C.02206	)	( 1243	E 6	13JUN1964	C.00209	)
( 1244	F 1	11JUN1964	0.00658	)	( 1258	F 1	6JL1964	0.00944	)	( 1259	F 2	6JL1964	C.00310	)
( 1260	F 3	6JL1964	0.00764	)	( 1270	F 1	10AU1964	C.00272	)	( 1285	F 1	15SE1964	C.54743	)
( 1304	F 1	11OC1964	0.00494	)	( 1305	F 2	11OC1964	0.00173	)	( 1379	GS 3	9MY1967	C.00309	)
( 1384	GS 8	10MY1967	0.00185	)	( 1387	GS11	12MY1967	C.01980	)	( 1388	GS12	12MY1967	C.00603	)
( 1389	GS13	12MY1967	0.01289	)	( 1390	GS14	12MY1967	0.00587	)	( 1391	GS15	12MY1967	C.00479	)
( 1394	GS18	12MY1967	0.00172	)	( 1555	GS 2	3CC1967	C.00706	)	( 1574	GS22	6OC1967	C.00863	)
( 1550	MR 1	5OC1967	0.01239	)	( 1350	BH 2	19AP1967	0.00220	)	( 1402	TR 2	6MY1967	C.00541	)
( 1403	CA 2	10MY1967	0.22535	)	( 1405	ES 2	12MY1967	0.00645	)	(				)

*Cymbella hebridica* (Grun.) Cleve

*Encyonema hebridicum* Grunow in: Cleve and Möller, Diatoms, No. 37. 1877.

*Cymbella hebridica* (Grun.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Foljd, 26(2):169. 1895.

154 CBHEBRID TOT NO CF STATIONS 1				
( 3541	CH	1FE1881	0.00578	) (

*Cymbella hustedtii* Krasske

*Cymbella hustedtii* Krasske, Bot. Arch., 3(4):204, fig. 11. 1923.

155 CBHUSTED TOT NO CF STATIONS 19														
(46914	CH	19AP1946	0.00107	)	(46919	CH	5JUN1947	C.00607	)	(46764	EV	17JL1937	C.01612	)
(46757	EV	25JL1937	0.00481	)	(46748	EV	13OC1937	0.02135	)	(46767	EV	27OC1937	C.00774	)
(46768	EV	16MR1938	0.01470	)	( 1285	F 1	15SE1964	C.10483	)	( 1386	GS10	12MY1967	C.00287	)
( 1388	GS12	12MY1967	0.00603	)	( 1557	GS 4	3OC1967	0.00374	)	( 1563	GS11	5OC1967	C.00234	)
( 1565	GS13	5CC1967	0.01014	)	( 1569	GS17	5OC1967	0.00149	)	( 1574	GS22	6OC1967	C.00288	)
( 1527	TR 1	20SE1967	0.00629	)	( 1553	SG 1	6OC1967	0.00734	)	( 1403	CA 2	10MY1967	0.01308	)
( 1404	MQ 2	10MY1967	0.01270	)	(									)

*Cymbella hybrida* Grun.

*Cymbella hybrida* Grunow ex Cleve and Möller, Diatoms, No. 161. 1878.

156 CBHYBRID TOT NO CF STATIONS 4											
(46921	CH	23NO1945	0.00065 )	(46747	EV	1AU1937	C.00248 )	(46751	EV	30MR1938	C.01117 )
( 1268	E 2	15AU1964	0.00274 )	(							

*Cymbella inaequalis* Ross

*Cymbella inaequalis* Ross, New Phytol., 51(3):381. 1952.

157 CBINAEQU TOT NO CF STATIONS 1				
( 1268	E 2	15AU1964	0.00274	) (

*Cymbella incerta* (Grun.) Cleve

*Cymbella pisciculus* var. *incerta* Grunow in: Cleve and Möller, Diatoms, No. 96. 1878.

*Cymbella incerta* (Grun.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):170. 1895.

158 CBINCERT TOT NO OF STATIONS 2

( 1270 F 1 1CAU1964 0.00272 ) ( 1388 GS12 12MY1967 C.02413 ) (

*Cymbella laevis* Naeg.

*Cymbella laevis* Naegeli ex Klitzing, Sp. Alg., p. 58. 1849.

159 CBLAEVIS TOT NO OF STATIONS 3

(46757 EV 25JUL1937 C.0C481 ) ( 1285 F 1 15SE1964 0.00582 ) ( 1350 GS14 12MY1967 C.0C587 )

*Cymbella lanceolata* (Ehr.) Kirchn.

*Cocconema lanceolatum* Ehrenberg, Infusionsthierchen, p. 224, pl. 19, fig. 6. 1838.

*Cymbella lanceolata* Kirchner in: Cohn, Kryptog.-Fl. Schlesien, Vol. 2, p. 188. 1878.

160 CBLANCED TOT NO OF STATIONS 3

(46751 EV 30MR1938 0.01117 ) ( 1545 WL 1 20C1967 0.00676 ) ( 1407 SM 2 14MY1967 C.00597 )

161 CBLANCEQ TOT NO OF STATIONS 1

( 1285 F 1 15SE1964 0.00582 ) (

*Cymbella lata* Grun.

*Cymbella lata* Grunow ex Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):165, pl. 4, fig. 27. 1894.

162 CBLATA TOT NO OF STATIONS 2

(46747 EV 1AU1937 0.0C248 ) ( 1285 F 1 15SE1964 0.00582 ) (

*Cymbella latens* Krasske

*Cymbella latens* Krasske, Arch. Hydrobiol., 31:43, text fig. p. 53. 1937.

182 CBVENTRQ TCT NO OF STATIONS 46

(60973 CH 1876 0.04724 )	(46770 EV 9JUL1937 0.01193 )	(46764 EV 17JUL1937 0.04835 )
(46750 EV 24SE1937 0.00943 )	(46768 EV 16MR1938 0.05880 )	( 1256 E 2 14JUL1964 0.0C183 )
( 1258 F 1 6JUL1964 0.0C180 )	( 1285 F 1 15SE1964 0.03494 )	( 1308 C 7 6NOV1964 0.00304 )
( 1316 D 6 9NOV1964 0.0C378 )	( 1451 C 7 16JUL1967 0.00197 )	( 1453 E 3 15JUL1967 C.0C253 )
( 1541 E 2 11OC1967 0.00532 )	( 1543 E 5 10CC1967 0.00718 )	( 1384 GS 8 10MY1967 C.0C185 )
( 1387 GS11 12MY1967 0.22180 )	( 1388 GS12 12MY1967 0.00603 )	( 1389 GS13 12MY1967 0.02063 )
( 1390 GS14 12MY1967 0.02349 )	( 1391 GS15 12MY1967 0.00479 )	( 1394 GS18 13MY1967 0.0C172 )
( 1397 GS21 13MY1967 C.00065 )	( 1398 GS22 14MY1967 C.00607 )	( 1574 GS22 60C1967 C.04315 )
( 1522 BH 1 18SE1967 0.00182 )	( 1523 RA 1 19SE1967 0.00923 )	( 1526 MD 1 20SE1967 0.01138 )
( 1528 SB 1 20SE1967 0.01444 )	( 1529 KW 1 20SE1967 C.19187 )	( 1545 WL 1 20C1967 0.0C676 )
( 1549 MQ 1 40C1967 0.01370 )	( 1550 MR 1 50C1967 0.18585 )	( 1553 SG 1 60C1967 0.00734 )
( 1428 MU 2 29MY1967 0.0C0603 )	( 1426 MS 2 29MY1967 0.03150 )	( 1427 LU 2 29MY1967 C.03632 )
( 1417 HQ 2 22MY1967 0.00374 )	( 1350 BH 2 19AP1967 C.05066 )	( 1399 PW 2 5MY1967 0.0C0680 )
( 1401 MO 2 6MY1967 0.02352 )	( 1354 GH 2 25AP1967 0.00173 )	( 1429 WL 2 29MY1967 C.04247 )
( 1403 CA 2 10MY1967 1.21616 )	( 1404 MQ 2 10MY1967 0.12703 )	( 1407 SM 2 14MY1967 C.01791 )
( 1406 GB 2 13MY1967 0.00270 )		

*Cymbella leptoceros* (Ehr.) Rabenh.

*Cocconema leptoceros* Ehrenberg, Ber. Akad. Wiss. Berlin, 1841:123, pl. 1 (2), fig. 30. 1843.

*Cymbella leptoceros* (Ehr.) Rabenhorst, Süssw.-Diat., p. 22, pl. 7, fig. 14a. 1853.

163 CBLEPTOC TOT NO OF STATIONS 3

( 1244	F 1	11JN1964	0.00110 )	( 1270	F 1	10AU1964	0.00817 )	( 1304	F 1	11OC1964	0.00247 )
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*Cymbella leptoceros* var. *rostrata* Hust.

*Cymbella leptoceros* var. *rostrata* Hustedt, Arch. Hydrobiol., 39:132, figs. 52-54. 1942.

164 CBLEPTVR TOT NO OF STATIONS 7

(46748	EV	13OC1937	0.02135 )	( 1387	GS11	12MY1967	0.00396 )	( 1389	GS13	12MY1967	0.00258 )
( 1426	MS 2	29MY1967	0.01050 )	( 1350	BH 2	19AP1967	0.00220 )	( 1403	CA 2	10MY1967	0.01308 )
( 1407	SM 2	14MY1967	0.00597 )								

*Cymbella mexicana* (Ehr.) Cleve

*Cocconema mexicanum* Ehrenberg, Ber. Akad. Wiss. Berlin, 1844:342. 1844.

*Cymbella mexicana* (Ehr.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):177. 1894.

165 CBMEXICA TOT NO OF STATIONS 6

(46920	CH	20DE1946	0.00031 )	( 1384	GS 8	10MY1967	0.00185 )	( 1530	FR 1	24SE1967	0.01000 )
( 1550	MR 1	50C1967	0.01239 )	( 1402	TR 2	6MY1967	0.00541 )	( 1354	GH 2	25AP1967	0.00173 )

*Cymbella microcephala* Grun.

*Cymbella microcephala* Grunow in: Van Heurck, Syn. Diat. Belgique, p. 63, pl. 8, figs. 36-39. 1885.

166 CBMICRGC TOT NO OF STATIONS 64

(60973	CH	1876	0.02362 )	(46910	CH	0C1945	0.00109 )	(46919	CH	5JN1947	0.02883 )
(46913	CH	6AU1947	0.01046 )	(46758	EV	5JN1937	0.00357 )	(46743	EV	20JN1937	0.00856 )
(46770	EV	9JL1937	0.00596 )	(46764	EV	17JL1937	0.00806 )	(46757	EV	25JL1937	0.01926 )
(46747	EV	1AU1937	0.00743 )	(46763	EV	23AU1937	0.30438 )	(46752	EV	15SE1937	0.08707 )
(46748	EV	13OC1937	0.06405 )	(46768	EV	16MR1938	0.05880 )	(46762	EV	18MR1938	0.04411 )
(46751	EV	30MR1938	0.01117 )	( 1256	E 2	14JL1964	0.00183 )	( 1258	F 1	6JL1964	0.01888 )
( 1259	F 2	6JL1964	0.00310 )	( 1260	F 3	6JL1964	0.00191 )	( 1268	E 2	15AU1964	0.00547 )
( 1269	E 3	15AU1964	0.00274 )	( 1270	F 1	10AU1964	0.02178 )	( 1279	E 1	16SE1964	0.01178 )
( 1284	E 6	17SE1964	0.00635 )	( 1285	F 1	15SE1964	0.59402 )	( 1287	F 3	15SE1964	0.00500 )
( 1297	D 6	14OC1964	0.00190 )	( 1302	E 5	13OC1964	0.00405 )	( 1304	F 1	11OC1964	0.01482 )
( 1338	C 3	28MR1967	0.00132 )	( 1449	C 3	16JL1967	0.00382 )	( 1506	A 6	29AU1967	0.00523 )
( 1512	E 3	1SE1967	0.00393 )	( 1533	A 4	19SE1967	0.00464 )	( 1536	E 2	24SE1967	0.00273 )
( 1387	GS11	12MY1967	0.01584 )	( 1389	GS13	12MY1967	0.00258 )	( 1554	GS 1	30C1967	0.00356 )
( 1555	GS 2	30C1967	0.01766 )	( 1556	GS 3	30C1967	0.00521 )	( 1558	GS 5	40C1967	0.01189 )
( 1560	GS 8	40C1967	0.00945 )	( 1565	GS13	50C1967	0.01014 )	( 1566	GS14	50C1967	0.00183 )
( 1567	GS15	50C1967	0.00318 )	( 1569	GS17	50C1967	0.00149 )	( 1574	GS22	60C1967	0.01151 )
( 1575	GS28	60C1967	0.00129 )	( 1546	LU 1	20C1967	0.01000 )	( 1522	BH 1	18SE1967	0.00182 )
( 1523	RA 1	19SE1967	0.00923 )	( 1526	MD 1	20SE1967	0.00569 )	( 1528	SB 1	20SE1967	0.01444 )
( 1529	KW 1	20SE1967	0.19187 )	( 1549	MQ 1	40C1967	0.02741 )	( 1552	SM 1	60C1967	0.00660 )
( 1550	MR 1	50C1967	0.04956 )	( 1350	BH 2	19AP1967	0.00881 )	( 1402	TR 2	6MY1967	0.00541 )
( 1403	CA 2	10MY1967	0.20923 )	( 1404	MC 2	10MY1967	0.01270 )	( 1407	SM 2	14MY1967	0.01194 )
( 1423	WA 2	25MY1967	0.00428 )								

*Cymbella naviculaformis* (Auersw.) Kirchn.

*Cymbella cuspidata* var. *naviculaformis* Auerswald ex Rabenhorst, Fl. Europaea Alg., Sect. 1, p. 78. 1864.

*Cymbella naviculaformis* (Auersw.) Kirchner in: Cohn, Kryptog.-Fl. Schlesien, Vol. 2, p. 187. 1878.

## 168 CBNVICU TCT NO OF STATIONS 10

(46921	CH	23NO1945	0.00065 )	(46917	CH	12JA1946	0.00028 )	(46924	CH	10MY1946	0.00071 )
(46905	CH	JA1947	0.00123 )	(46909	CH	MR1947	0.00455 )	(46916	CH	4MY1947	0.00034 )
(46906	CH	MY1947	0.00066 )	(46919	CH	5JN1947	0.00455 )	(46922	CH	21AU1947	0.00048 )
(46744	EV	60C1937	0.00488 )	(							

*Cymbella norvegica* Grun.

*Cymbella norvegica* Grunow in: A. Schmidt, Atlas Diat., pl. 10, fig. 41.  
1875.

## 169 CBNCRVEG TCT NO OF STATIONS 1

( 1403	CA 2	10MY1947	0.01308 )	(							
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*Cymbella obtusiuscula* Kütz.

*Cymbella obtusiuscula* Kützing, Bacill., p. 79, pl. 3, fig. 68. 1844.

## 170 CBOBTUSI TCT NO OF STATIONS 6

(60973	CH	1876	0.02362 )	(46758	EV	5JN1937	0.00357 )	( 1393	GS17	13MY1967	0.00274 )
( 1567	GS15	50C1967	0.00318 )	( 1520	HO 1	18SE1967	0.00471 )	( 1405	ES 2	12MY1967	0.00645 )

*Cymbella parva* (Wm. Smith) Cleve

*Cocconema parvum* Wm. Smith, Syn. British Diat., Vol. 1, p. 76, pl. 23,  
fig. 222. 1853.

*Cymbella parva* (Wm. Smith) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd,  
26(2):172. 1894.

## 171 CBPARVA TCT NO OF STATIONS 5

(60973	CH	1876	0.02362 )	( 1256	E 2	14JL1964	0.00183 )	( 1285	F 1	15SE1964	0.01747 )
( 1546	LU 1	20C1967	0.00500 )	( 1403	CA 2	10MY1967	0.02615 )	(			

*Cymbella parvula* Krasske

*Cymbella parvula* Krasske, Zeitschr. Geschiebeforsch., 9(2):92, pl. 2,  
fig. 3. 1933.

## 172 CBPARVUL TCT NO OF STATIONS 8

(46758	EV	5JN1937	0.00357 )	( 1258	F 1	6JL1964	0.00236 )	( 1352	GS16	12MY1967	0.00308 )
( 1565	GS13	50C1967	0.01521 )	( 1574	GS22	60C1967	0.00288 )	( 1553	SG 1	60C1967	0.00734 )
( 1404	MO 2	10MY1967	0.02541 )	( 1407	SM 2	14MY1967	0.00597 )	(			

*Cymbella prostrata* (Berk.) Cleve

*Monema prostratum* Berkeley, Gleanings British Alg., pl. 4, fig. 3. 1832.

*Cymbella prostrata* (Berk.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd,  
26(2): 167. 1894.

## 173 CBPROSTR TCT NO OF STATIONS 80

(46921	CH	23NO1945	0.00129 )	(46917	CH	12JA1946	0.00083 )	(46915	CH	20FE1946	0.00569 )
(46924	CH	10MY1946	0.00071 )	(46923	CH	22NO1946	0.00437 )	(46920	CH	20DE1946	0.00031 )
(46916	CH	4MY1947	0.00034 )	(46906	CH	MY1947	0.00066 )	(46919	CH	5JN1947	0.05463 )
(46922	CH	21AU1947	0.00291 )	(46758	EV	5JN1937	0.01426 )	(46764	EV	17JL1937	0.00806 )
(46757	EV	25JL1937	0.00963 )	(46747	EV	1AU1937	0.00495 )	(46763	EV	23AU1937	0.02029 )
(46765	EV	30AU1937	0.00558 )	(46752	EV	15SE1937	0.13061 )	(46748	EV	130C1937	0.12810 )
(46749	EV	12MR1938	0.03641 )	(46768	EV	16MR1938	0.01470 )	(46762	EV	18MR1938	0.06617 )
(46766	EV	14DE1938	0.01584 )	( 1243	E 6	13JN1964	0.00418 )	( 1245	F 2	11JN1964	0.00346 )
( 1265	C* 2	10AU1964	0.00224 )	( 1270	F 1	10AU1964	0.00272 )	( 1279	E 1	16SE1964	0.00393 )
( 1285	F 1	15SE1964	0.01165 )	( 1343	A 6	19AP1967	0.00208 )	( 1345	C 5	25AP1967	0.00195 )
( 1369	A 4	4MY1967	0.00745 )	( 1375	E 3	7MY1967	0.00241 )	( 1416	E 5	28MY1967	0.00219 )
( 1504	A 3	28AU1967	0.00247 )	( 1512	E 3	15E1967	0.00393 )	( 1536	E 2	24SE1967	0.01091 )
( 1538	E 5	23SE1967	0.29277 )	( 1386	GS10	12MY1967	0.00287 )	( 1387	GS11	12MY1967	0.00792 )
( 1394	GS18	13MY1967	0.00172 )	( 1395	GS19	13MY1967	0.00117 )	( 1396	GS20	13MY1967	0.00074 )
( 1397	GS21	13MY1967	0.00392 )	( 1554	GS 1	30C1967	0.00356 )	( 1555	GS 2	30C1967	0.00353 )
( 1556	GS 3	30C1967	0.01043 )	( 1557	GS 4	30C1967	0.00747 )	( 1563	GS11	50C1967	0.00234 )
( 1567	GS15	50C1967	0.00635 )	( 1568	GS16	50C1967	0.00144 )	( 1569	GS17	50C1967	0.00149 )



( 1573	GS21	60C1967	0.00336 )	( 1574	GS22	60C1967	0.03739 )	( 1544	MU 1	20C1967	C.CC238 )
( 1547	MS 1	20C1967	0.00798 )	( 1524	MI 1	20SE1967	0.13135 )	( 1546	LU 1	20C1967	C.C6502 )
( 1521	SH 1	18SE1967	0.00577 )	( 1523	RA 1	19SE1967	0.02768 )	( 1525	PW 1	20SE1967	C.C8355 )
( 1526	MO 1	20SE1967	0.06258 )	( 1527	TR 1	20SE1967	0.06289 )	( 1528	SB 1	20SE1967	C.C2888 )
( 1529	KW 1	20SE1967	2.68617 )	( 1530	FR 1	24SE1967	0.16002 )	( 1545	WL 1	20C1967	C.CC676 )
( 1548	CA 1	30C1967	0.05088 )	( 1552	SM 1	60C1967	0.01321 )	( 1550	MR 1	50C1967	C.C07434 )
( 1553	SG 1	60C1967	0.01469 )	( 1428	MU 2	29MY1967	0.00301 )	( 1426	MS 2	29MY1967	C.C03150 )
( 1427	LU 2	29MY1967	0.01211 )	( 1350	BH 2	19AP1967	0.00441 )	( 1401	MO 2	6MY1967	C.C00588 )
( 1402	TR 2	6MY1967	0.01624 )	( 1403	CA 2	10MY1967	0.06539 )	( 1407	SM 2	14MY1967	C.C4180 )
( 1349	CI 2	19AP1967	0.00359 )	( 1406	GB 2	13MY1967	0.00270 )	(			

*Cymbella rugosa* Hust.

*Cymbella rugosa* Hustedt, Abh. Naturw. Ver. Bremen, 34(1):67, figs. 29-31. 1955.

179	CBTURGIO	TOT NO OF STATIONS	3								
( 3541	CH	1FE1881	0.00578 )	( 1244	F 1	11JN1964	C.C0110 )	( 1270	F 1	10AU1964	C.CC272 )

*Cymbella sinuata* Greg.

*Cymbella sinuata* Gregory, Quart. J. Micr. Sci., 4:4, pl. 1, fig. 17. 1856.

175	CBSINUAT	TOT NO OF STATIONS	30								
( 3540	CH	11MY1879	0.00466 )	( 46758	EV	5JN1937	C.C0357 )	( 46764	EV	17JL1937	C.CC806 )
( 46763	EV	23AU1937	C.C02029 )	( 46748	EV	13OC1937	0.02135 )	( 1256	E 2	14JL1964	C.C0183 )
( 1258	F 1	6JL1964	0.00472 )	( 1263	C 7	15AU1964	C.C0400 )	( 1275	D 2	17SE1964	C.C0645 )
( 1285	F 1	15SE1964	0.00582 )	( 1372	C 5	5MY1967	0.00355 )	( 1375	E 3	7MY1967	C.CC241 )
( 1394	GS18	13MY1967	0.00172 )	( 1567	GS15	50C1967	C.C00635 )	( 1568	GS16	50C1967	C.CC144 )
( 1569	GS17	50C1967	0.00149 )	( 1571	GS19	60C1967	C.C00059 )	( 1572	GS20	60C1967	C.CC090 )
( 1573	GS21	60C1967	0.00112 )	( 1574	GS22	60C1967	C.C00863 )	( 1575	GS28	60C1967	C.CC129 )
( 1546	LU 1	20C1967	0.00500 )	( 1526	MC 1	20SE1967	0.01138 )	( 1527	TR 1	20SE1967	C.CC629 )
( 1551	ES 1	50C1967	0.00799 )	( 1550	MR 1	50C1967	C.C26019 )	( 1426	MS 2	29MY1967	C.C01050 )
( 1417	HO 2	22MY1967	0.00374 )	( 1350	BH 2	19AP1967	0.01762 )	( 1401	MO 2	6MY1967	C.C00588 )

*Cymbella sinuata* fo. *ovata* Hust.

*Cymbella sinuata* fo. *ovata* Hustedt, Internat. Rev. Hydrobiol., 10:236. 1922.

176	CBSINUFO	TOT NO OF STATIONS	1								
( 1350	BH 2	19AP1967	0.00220 )	(							

*Cymbella sinuata* var. *antiqua* (Grun.) Cleve

*Cymbella abnormis* var. *antiqua* Grunow in; Mojsisovics and Neumayer, Beitr. Paläontol. Österreich-Ungarns, Bd. 2, Heft 4, p. 141, pl. 29, fig. 31. 1882.

Coll: 1105.

*Cymbella triangulata* (Ehr.) Cleve

*Gloeonema triangulatum* Ehrenberg, Ber. Akad. Wiss. Berlin, 1845:77. 1846.  
*Cymbella triangulata* (Ehr.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):168. 1894.

177	CBTRIANG	TOT NO OF STATIONS	36								
( 3540	CH	11MY1879	0.00466 )	( 3541	CH	1FE1881	C.C03913 )	( 46921	CH	23NO1945	C.C00323 )
( 46915	CH	20FE1946	0.01707 )	( 46923	CH	22NO1946	0.02841 )	( 46920	CH	20DE1946	C.C00123 )
( 46905	CH	JA1947	0.00123 )	( 46909	CH	MR1947	0.01366 )	( 46906	CH	MY1947	C.CC066 )
( 46907	CH	JL1947	0.00049 )	( 46922	CH	21AU1947	0.00533 )	( 1247	B 3	14JL1964	C.C00427 )
( 1259	F 2	6JL1964	0.00310 )	( 1275	D 2	17SE1964	0.00645 )	( 1284	E 6	17SE1964	C.C01589 )
( 1285	F 1	15SE1964	0.01747 )	( 1302	E 5	13OC1964	0.00405 )	( 1304	F 1	11OC1964	C.CC741 )
( 1322	E 6	7NO1964	0.00333 )	( 1323	F 1	6NO1964	0.00279 )	( 1324	F 2	6NO1964	C.C00233 )
( 1388	GS12	12MY1967	0.01810 )	( 1390	GS14	12MY1967	0.00587 )	( 1557	GS 4	30C1967	C.CC374 )

( 1558	GS 5	40C1967	0.00396 )	( 1562	GS1C	50C1967	0.00247 )	( 1563	GS11	50C1967	0.00234 )
( 1564	GS12	50C1967	0.00494 )	( 1566	GS14	50C1967	0.00183 )	( 1567	GS15	50C1967	0.02382 )
( 1568	GS16	50C1967	0.00433 )	( 1569	GS17	50C1967	0.01635 )	( 1570	GS18	50C1967	0.00992 )
( 1548	CA 1	30C1967	0.03816 )	( 1551	ES 1	50C1967	0.00799 )	( 1421	CH 2	23MY1967	0.01735 )

*Cymbella tumida* (Bréb.) V. H.

*Cocconema tumida* de Brébisson ex Kützing, Sp. Alg., p. 60. 1849.

*Cymbella tumida* (Bréb.) Van Heurck, Syn. Diat. Belgique, p. 64, pl. 2, fig. 10. 1885.

178	CBTUMIDA	TCT	NO	OF	STATIONS	1
( 1544	MU 1	20C1967	0.00477 )	(		

*Cymbella turgida* Greg.

*Cymbella turgida* Gregory, Quart. J. Micr. Sci., 4:5, pl. 1, fig. 18. 1856.

180	CBTURGVP	TCT	NO	OF	STATIONS	2		
( 1387	GS11	12MY1967	0.01188 )	( 1389	GS13	12MY1967	0.00258 )	(

*Cymbella turgidula* Grun.

*Cymbella turgidula* Grunow in: A. Schmidt, Atlas Diat., pl. 9, figs. 23-26. 1875.

Coll: 1244.

*Cymbella ventricosa* Agardh

*Cymbella ventricosa* Agardh, Consp. Crit. Diat., part 1, p. 9. 1830.

181	CBVENTRI TOT NO OF STATIONS				42										
(46921	CH	23NO1945	0.00065 )	(46524	CH	10MY1946	0.00282 )	(46919	CH	5JN1947	0.00152 )				
(46922	CH	21AU1947	0.00097 )	(46758	EV	5JN1937	0.05706 )	(46743	EV	20JN1937	0.00428 )				
(46770	EV	9JL1937	0.00596 )	(46764	EV	17JL1937	0.00806 )	(46757	EV	25JL1937	0.01444 )				
(46747	EV	1AU1937	0.00990 )	(46763	EV	23AU1937	0.10146 )	(46765	EV	30AU1937	0.00558 )				
(46752	EV	15SE1937	0.13061 )	(46760	EV	22SE1937	0.00985 )	(46750	EV	24SE1937	0.00471 )				
(46748	EV	13OC1937	0.02135 )	(46767	EV	27OC1937	0.00387 )	(46749	EV	12MR1936	0.00427 )				
(46762	EV	18MR1938	0.06617 )	( 1232	E 5	16MY1964	0.00522 )	( 1240	D 6	10JN1964	0.00460 )				
( 1243	E 6	13JN1964	0.01253 )	( 1244	F 1	11JN1964	0.00548 )	( 1279	E 1	16SE1964	0.00393 )				
( 1377	GS 1	9MY1967	0.00396 )	( 1378	GS 2	9MY1967	0.00421 )	( 1392	GS16	12MY1967	0.00308 )				
( 1394	GS18	13MY1967	0.00516 )	( 1559	GS 7	40C1967	0.00350 )	( 1565	GS13	50C1967	0.00507 )				
( 1567	GS15	50C1967	0.00318 )	( 1569	GS17	50C1967	0.00149 )	( 1571	GS19	60C1967	0.00176 )				
( 1575	GS28	60C1967	0.00129 )	( 1547	MS 1	20C1967	0.01597 )	( 1546	LU 1	20C1967	0.02001 )				
( 1522	BH 1	18SE1967	0.00547 )	( 1527	TR 1	20SE1967	0.03774 )	( 1530	FR 1	24SE1967	0.03000 )				
( 1426	MS 2	29MY1967	0.01050 )	( 1402	TR 2	6MY1967	0.01083 )	( 1405	ES 2	12MY1967	0.00645 )				

### Species incertae sedis

*Cymbella* sp. (aff. *C. cuspidata* var.?).

151	CBCUSPVC TCT NO OF STATIONS					8					
(46758	EV	5JN1937	0.01426 )	(46757	EV	25JL1937	0.00963 )	(46747	EV	1AU1937	0.01485 )
(46763	EV	23AU1937	0.02029 )	(46762	EV	18MR1938	0.02206 )	( 1545	WL 1	20C1967	0.00676 )
( 1354	GH 2	25AP1967	0.00173 )	( 1404	MC 2	10MY1967	0.02541 )	(			

*Cymbella* sp. (aff. *C. pusilla*).

174 CBPUSILQ TCT NO OF STATIONS											10
(46919	CH	5JN1947	0.00303 )	(46764	EV	17JL1937	0.02417 )	(46747	EV	1AU1937	(.00495 )
(46763	EV	23AU1937	0.02029 )	( 1242	E 3	13JN1964	0.00150 )	( 1270	F 1	10AU1964	C.CC545 )
( 1285	F 1	15SE1964	0.04077 )	( 1375	E 3	7MY1967	C.00241 )	( 1566	GS14	50C1967	C.00183 )
( 1404	MQ 2	10MY1967	0.01270 )	(							

*Cymbella* sp. #4.

184 CBSPECOD TOT NO OF STATIONS 7											
(46752	EV	15SE1937	0.02177 )	(46750	EV	24SE1937	0.00471 )	(46748	EV	13OC1937	0.02135 )
(46768	EV	16MR1938	0.01470 )	(46751	EV	30MR1938	1.21706 )	( 1284	E 6	17SE1964	0.00318 )
( 1445	B 6	14DC1964	0.00326 )	(							

*Cymbella* sp. #6.

186 CBSPECOF TOT NO OF STATIONS 11											
(46919	CH	5JN1947	0.00152 )	(46758	EV	5JN1937	0.01070 )	(46770	EV	9JL1937	0.00596 )
(46764	EV	17JL1937	0.04835 )	(46747	EV	1AU1937	0.00248 )	(46752	EV	15SE1937	0.02177 )
(46744	EV	8OC1937	0.00975 )	(46767	EV	27OC1937	0.00387 )	(46759	EV	19MY1938	0.00338 )
( 1565	GS13	5OC1967	0.02028 )	( 1405	ES 2	12MY1967	0.00645 )	(			

*Cymbella* sp. #7.

187 CBSPECOG TOT NO OF STATIONS 4											
(46770	EV	9JL1937	0.01785 )	(46764	EV	17JL1937	0.04835 )	(46757	EV	25JL1937	0.03370 )
(46768	EV	16MR1938	0.01470 )	(							

*Cymbella* sp. #8.

188 CBSPECOH TOT NO OF STATIONS 1											
(46764	EV	17JL1937	0.01612 )	(							

*Cymbella* sp. #9.

189 CBSPECOT TOT NO OF STATIONS 1											
(46770	EV	9JL1937	0.00596 )	(							

*Cymbella* sp. #10.

190 CBSPECOJ TOT NO OF STATIONS 1											
( 1394	GS18	13MY1967	0.00172 )	(							

*Cymbella* sp. #11.

191 CBSPECCK TOT NO OF STATIONS 1											
( 1398	GS22	14MY1967	0.00304 )	(							

*Cymbella* sp. #12.

192 CBSPECOL TOT NO OF STATIONS 1											
( 1565	GS13	5OC1967	0.00507 )	(							

*Cymbella* sp. #13.

193 CBSPECOM TOT NO OF STATIONS 1											
( 1567	GS15	5OC1967	0.00159 )	(							

*Cymbella* sp. #14.

194	CBSPECN	TCT	AC	CF	STATIONS	1
( 1573	GS21		60C1967	0.00112	)	(

Genus *Cymbellonitzschia* Hust.

Hustedt in: A. Schmidt, Atlas Diat., pl. 352, figs. 12-13. 1924.

Members of the genus *Cymbellonitzschia* usually comprise a minor portion of the flora. Scattered reports of its occurrence indicate that it finds its primary habitat in periphyton and epipellic communities. The only species found in Lake Michigan is most abundant in epipellic communities in relatively deep water. Only isolated accidental occurrences are noted in plankton collections.

*Cymbellonitzschia diluviana* Hust.

*Cymbellonitzschia diluviana* Hustedt, Abh. Naturw. Verein Bremen 33(3):453, fig. 23-24. 1954.

195 CADILIU TOT NO OF STATIONS												3		
( 1550	MR 1	50C1967	0.02478	)	( 1417	HO 2	22MY1967	0.00374	)	( 1350	BH 2	19AP1967	C.00220	)

Genus *Denticula* Ehr.  
Ehrenberg, Infusionsthierschen, p. 207. 1838.

Most freshwater members of the genus *Denticula* are most abundant in communities growing on solid surfaces. This is true of the single representative that occurs in our collections. It is, however, apparently a successful facultative plankton as it is noted in moderate abundance in many plankton collections from Lake Michigan, especially in nearshore collections.

*Denticula tenuis* var. *crassula* (Naeg.) Hust.

*Denticula crassula* Naegeli ex Kützling, Sp. Alg., p. 889. 1849.

*Denticula tenuis* var. *crassula* (Naeg.) Hustedt in: Pascher, Süßw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 381, fig. 724. 1930.

196 DETENUVC TCT NO CF STATIONS 98											
(60973	CH	1876	0.02362 )	(46921	CH	23NO1945	0.00065 )	(46914	CH	19AP1946	0.00107 )
(46920	CH	20DE1946	0.00031 )	(46916	CH	4MY1947	0.00034 )	(46906	CH	MY1947	0.00066 )
(46919	CH	5JN1947	0.00303 )	(46907	CH	JL1947	0.00049 )	(46758	EV	5JN1937	0.00357 )
(46764	EV	17JL1937	0.01612 )	(46763	EV	23AU1937	0.04058 )	(46752	EV	15SE1937	0.06530 )
(46748	EV	13OC1937	0.04270 )	(46767	EV	27OC1937	0.00774 )	(46762	EV	18MR1938	0.02206 )
(1240	D 6	10JN1964	0.00153 )	(1243	E 6	13JN1964	0.01253 )	(1244	F 1	11JN1964	0.00877 )
(1254	D 2	15JL1964	0.00192 )	(1256	E 2	14JL1964	0.00183 )	(1258	F 1	6JL1964	0.17462 )
(1259	F 2	6JL1964	0.00930 )	(1260	F 3	6JL1964	0.01528 )	(1267	D 6	18AU1964	0.00432 )
(1268	E 2	15AU1964	0.12310 )	(1270	F 1	10AU1964	0.05718 )	(1444	B 6	19SE1964	0.00303 )
(1278	D 6	18SE1964	0.00384 )	(1279	E 1	16SE1964	0.05497 )	(1284	E 6	17SE1964	0.02224 )
(1285	F 1	15SE1964	0.81533 )	(1286	F 2	15SE1964	0.01095 )	(1287	F 3	15SE1964	0.00500 )
(1299	E 2	12OC1964	0.00314 )	(1301	E 4	13OC1964	0.00442 )	(1302	E 5	13OC1964	0.00405 )
(1304	F 1	11OC1964	0.03457 )	(1305	F 2	11OC1964	0.00690 )	(1306	F 3	11OC1964	0.00554 )
(1322	E 6	7NO1964	0.00333 )	(1323	F 1	6NO1964	0.00139 )	(1340	C 7	28MR1967	0.00145 )
(1346	C 7	21AP1967	0.00134 )	(1374	E 2	7MY1967	0.00299 )	(1449	C 3	16JL1967	0.00382 )
(1452	E 2	14JL1967	0.01916 )	(1512	E 3	1SE1967	0.00393 )	(1533	A 4	19SE1967	0.00464 )
(1534	A 6	19SE1967	0.00310 )	(1536	E 2	24SE1967	0.01363 )	(1537	E 3	24SE1967	0.00431 )
(1538	E 5	23SE1967	0.02762 )	(1541	E 2	11OC1967	0.00532 )	(1542	E 3	11OC1967	0.01526 )
(1543	E 5	10OC1967	0.00718 )	(1580	GS 4	9MY1967	0.00336 )	(1581	GS 5	10MY1967	0.00239 )
(1582	GS 6	10MY1967	0.00555 )	(1584	GS 8	10MY1967	0.00555 )	(1586	GS10	12MY1967	0.00287 )
(1587	GS11	12MY1967	0.20596 )	(1589	GS13	12MY1967	0.01805 )	(1594	GS18	13MY1967	0.00516 )
(1598	GS22	14MY1967	0.00911 )	(1554	GS 1	30C1967	0.02846 )	(1555	GS 2	30C1967	0.02472 )
(1556	GS 3	30C1967	0.01564 )	(1557	GS 4	30C1967	0.02242 )	(1558	GS 5	40C1967	0.03171 )
(1559	GS 7	40C1967	0.01049 )	(1561	GS 9	40C1967	0.00587 )	(1562	GS10	50C1967	0.00493 )
(1563	GS11	50C1967	0.00468 )	(1564	GS12	50C1967	0.00165 )	(1565	GS13	50C1967	0.01521 )
(1566	GS14	50C1967	0.00183 )	(1567	GS15	50C1967	0.00318 )	(1568	GS16	50C1967	0.00144 )
(1569	GS17	50C1967	0.00145 )	(1574	GS22	60C1967	0.17834 )	(1547	MS 1	20C1967	0.02395 )
(1546	LU 1	20C1967	0.02501 )	(1526	MO 1	20SE1967	0.05689 )	(1527	TR 1	20SE1967	0.08176 )
(1529	KW 1	20SE1967	0.57561 )	(1530	FR 1	24SE1967	0.32003 )	(1545	WL 1	20C1967	0.00676 )
(1549	MO 1	40C1967	0.06852 )	(1551	ES 1	50C1967	0.02396 )	(1552	SM 1	60C1967	0.05943 )
(1550	MR 1	50C1967	0.01239 )	(1553	SG 1	60C1967	0.02203 )	(1401	MO 2	6MY1967	0.01764 )
(1402	TR 2	6MY1967	0.02166 )	(1352	KW 2	21AP1967	0.02577 )	(1403	CA 2	10MY1967	0.6277C )
(1404	MO 2	10MY1967	0.01270 )	(1407	SM 2	14MY1967	0.17317 )	(			

Genus *Diatoma* Bory (nom. cons. non Loureiro 1790)  
Bory, Dict. Class. Hist. Nat., 5:461. 1824.

Of the members of the genus *Diatoma* occurring in Lake Michigan, only *D. tenue* var. *elongata* and *D. tenue* var. *pachycephala* are abundant in off-shore plankton collections. Both of these entities are erratic in occurrence but tend to be most abundant in areas that are appreciably eutrophied. During peak bloom years they are taken in collections from the entire basin.

*Diatoma ehrenbergii* Kütz.

*Diatoma ehrenbergii* Kützling, Bacill., p. 48, pl. 17, fig. 17(1-3). 1844.

197 DIEHRENB TCT NO OF STATIONS 40											
(46921	CH	23NO1945	0.00065 )	(46924	CH	10MY1946	0.00141 )	(46923	CH	22NO1946	C.00219 )
(46920	CH	20DE1946	0.00092 )	(46916	CH	4MY1947	0.00170 )	(46906	CH	MY1947	C.00066 )
(46919	CH	5JN1947	2.41574 )	(46907	CH	JL1947	0.00049 )	(46922	CH	21AU1947	C.00097 )
(46764	EV	5JN1937	1.49775 )	(46771	EV	11JN1937	0.00238 )	(46770	EV	9JL1937	C.00596 )

(46764	EV	17JL1937	0.00806 )	(46757	EV	25JL1937	0.00481 )	(46767	EV	27OC1937	0.00387 )
(46756	EV	27AP1938	0.00168 )	(46761	EV	27MY1938	0.00273 )	(1226	C 7	16MY1964	0.00381 )
(1345	C 5	25AP1967	0.00780 )	(1346	C 7	21AP1967	0.00267 )	(1348	E 5	23AP1967	0.00822 )
(1449	C 3	16JL1967	0.00764 )	(1395	GS19	13MY1967	0.00587 )	(1397	GS21	13MY1967	0.01112 )
(1398	GS22	14MY1967	0.00607 )	(1572	GS20	60C1967	0.00090 )	(1574	GS22	60C1967	0.00288 )
(1546	LU 1	20C1967	0.02001 )	(1530	FR 1	24SE1967	0.01000 )	(1552	SM 1	60C1967	0.00660 )
(1550	MR 1	50C1967	0.03717 )	(1426	MS 2	29MY1967	0.20997 )	(1427	LU 2	29MY1967	0.01211 )
(1417	HO 2	22MY1967	0.09346 )	(1418	SH 2	22MY1967	0.04666 )	(1401	MO 2	6MY1967	0.00588 )
(1354	GH 2	25AP1967	0.01208 )	(1429	WL 2	29MY1967	0.04247 )	(1407	SM 2	14MY1967	0.19108 )
(1423	WA 2	25MY1967	0.00856 )	(							

204 DIVULGVG TOT NO OF STATIONS 1

(1340 C 7 28MR1967 0.00800 ) (

*Diatoma hiemale* var. *mesodon* (Ehr.) Grun.

*Fragilaria mesodon* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1838:57,  
pl. 2(1), fig. 9. 1839.

*Diatoma hiemale* var. *mesodon* Grunow in: Van Heurck, Syn. Diat. Belgique,  
pl. 51, figs. 3-4. 1881.

198 DIHIEMVM TCT NO OF STATIONS 2

(46758 EV 5JN1937 0.00357 ) (1341 A 3 19AP1967 0.00108 ) (

*Diatoma tenue* Agardh

*Diatoma tenue* Argardh, Svenska Bot., Vol. 7, pl. 491, figs. 4-5. 1812.

199 DITENUE TGY NO OF STATIONS 58

(46924	CH	10MY1946	0.01411 )	(46909	CH	MR1947	0.02277 )	(46912	CH	AP1947	0.01150 )
(46771	EV	11JN1937	0.01189 )	(46749	EV	12MR1938	0.03641 )	(46761	EV	27MY1938	0.00273 )
(46766	EV	14DE1938	0.06337 )	(1230	E 2	16MY1964	0.00296 )	(1439	B 6	5JN1964	0.00200 )
(1239	D 4	11JN1964	0.00116 )	(1240	O 6	10JN1964	0.00153 )	(1241	E 2	13JN1964	0.00296 )
(1244	F 1	11JN1964	0.00329 )	(1440	B 6	11JL1964	0.00737 )	(1264	C* 1	10AU1964	0.00193 )
(1265	C* 2	10AU1964	0.01118 )	(1268	E 2	15AU1964	0.00274 )	(1269	E 3	15AU1964	0.00548 )
(1302	E 5	13OC1964	0.00405 )	(1337	C 3	2MR1967	0.68490 )	(1338	C 3	28MR1967	0.25520 )
(1340	C 7	28MR1967	0.06617 )	(1431	A 3	12JN1967	0.00257 )	(1432	A 4	13JN1967	0.00511 )
(1433	C 3	17JN1967	0.03875 )	(1435	C 7	13JN1967	0.00631 )	(1446	A 3	11JL1967	0.00489 )
(1449	C 3	16JL1967	0.00764 )	(1451	C 7	16JL1967	0.08267 )	(1452	E 2	14JL1967	0.00426 )
(1454	E 5	15JL1967	0.00200 )	(1536	E 2	24SE1967	0.01363 )	(1395	GS19	13MY1967	0.00235 )
(1396	GS20	13MY1967	0.01036 )	(1397	GS21	13MY1967	0.41205 )	(1398	GS22	14MY1967	0.00304 )
(1554	GS 1	30C1967	0.01067 )	(1555	GS 2	30C1967	0.00353 )	(1544	MU 1	20C1967	0.01191 )
(1522	BH 1	18SE1967	0.00365 )	(1550	MR 1	50C1967	0.02478 )	(1428	MU 2	29MY1967	1.39805 )
(1426	MS 2	25MY1967	0.16798 )	(1351	MI 2	21AP1967	0.17688 )	(1417	HO 2	22MY1967	0.07103 )
(1350	BH 2	19AP1967	0.63435 )	(1425	RA 2	25MY1967	0.01768 )	(1399	PW 2	5MY1967	0.00680 )
(1352	KW 2	21AP1967	0.00859 )	(1353	FR 2	23AP1967	0.09494 )	(1354	GH 2	25AP1967	1.40847 )
(1429	WL 2	29MY1967	0.03185 )	(1405	ES 2	12MY1967	0.00645 )	(1407	SM 2	14MY1967	0.50158 )
(1406	GB 2	13MY1967	0.00809 )	(1421	CH 2	23MY1967	0.06940 )	(1422	GA 2	23MY1967	0.03576 )
(1423	WA 2	25MY1967	0.03426 )	(							

*Diatoma tenue* var. *elongatum* Lyngb.

*Diatoma tenue* var. *elongatum* Lyngbye, Tent. Hydrophyt. Danicae, p. 179,  
pl. 61, figs. E 1-2. 1819.

200 DITENUE TOT NO OF STATIONS 283

(46910	CH	OC1945	1.63302 )	(46921	CH	23NO1945	15.99441 )	(46908	CH	DE1945	25.19637 )
(46917	CH	12JA1946	36.27559 )	(46915	CH	20EE1946	28.11130 )	(46914	CH	19AP1946	11.75887 )
(46924	CH	10MY1946	5.57170 )	(46923	CH	22NO1946	1.70477 )	(46920	CH	20DE1946	3.28436 )
(46905	CH	JA1947	3.02733 )	(46909	CH	MR1947	14.64869 )	(46912	CH	AP1947	0.35094 )
(46916	CH	4MY1947	27.78786 )	(46906	CH	MR1947	18.37766 )	(46919	CH	5JN1947	18.09836 )
(46907	CH	JL1947	7.17972 )	(46913	CH	6AU1947	0.84719 )	(46922	CH	21AU1947	2.23663 )
(46758	EV	5JN1937	2.09685 )	(46771	EV	11JN1937	1.19823 )	(46743	EV	20JN1937	0.14987 )
(46745	EV	3JL1937	0.02090 )	(46770	EV	9JL1937	0.01789 )	(46764	EV	17JL1937	0.03223 )
(46757	EV	25JL1937	0.18295 )	(46747	EV	1AU1937	0.02723 )	(46763	EV	23AU1937	0.06088 )
(46765	EV	30AU1937	0.03904 )	(46752	EV	15SE1937	0.10884 )	(46760	EV	22SE1937	0.03939 )
(46750	EV	24SE1937	0.02828 )	(46744	EV	60C1937	2.18494 )	(46748	EV	13OC1937	0.02135 )
(46767	EV	27CC1937	0.05802 )	(46745	EV	12MR1938	0.52191 )	(46768	EV	16MR1938	0.16169 )
(46762	EV	18MR1938	0.08822 )	(46751	EV	30MR1938	1.25056 )	(46772	EV	18AP1938	0.45681 )
(46756	EV	27AP1938	7.42818 )	(46759	EV	19MY1938	0.69548 )	(46761	EV	27MY1938	0.33522 )

(146766	EV	14DE1538	7.98479 )	( 1223	B 3	18MY1964	0.02344 )	( 1224	B 4	18MY1964	0.01568 )
( 1225	C 6	15MY1964	0.20776 )	( 1226	C 7	16MY1964	0.06849 )	( 1227	C* 2	13MY1964	0.00219 )
( 1228	D 2	14MY1964	0.00584 )	( 1229	D 5	14MY1964	0.00634 )	( 1230	E 2	16MY1964	0.05334 )
( 1233	B 3	5JN2564	0.15241 )	( 1234	B 3	18JN1964	0.23336 )	( 1235	C 7	16JN1964	0.17793 )
( 1439	B 6	5JN1964	0.12787 )	( 1236	C* 1	8JN1964	1.71533 )	( 1237	C* 2	8JN1964	0.27842 )
( 1240	D 6	10JN1964	0.17180 )	( 1241	E 2	13JN1964	0.25875 )	( 1242	E 3	13JN1964	0.00450 )
( 1243	E 6	13JN1964	0.21298 )	( 1244	F 1	11JN1964	0.04934 )	( 1245	F 2	11JN1964	0.01729 )
( 1247	B 3	14JL1964	0.29880 )	( 1248	B 3	24JL1964	0.03547 )	( 1440	B 6	11JL1964	0.06265 )
( 1441	B 6	24JL1964	0.01542 )	( 1249	C 3	8JL1964	1.14068 )	( 1250	C 6	10JL1964	0.06166 )
( 1251	C 7	16JL1964	0.13037 )	( 1252	C* 1	16JL1964	1.07392 )	( 1253	C* 2	16JL1964	0.03904 )
( 1254	D 2	15JL1964	0.67037 )	( 1255	D 5	15JL1964	0.08726 )	( 1256	E 2	14JL1964	0.23265 )
( 1257	E 3	14JL1964	0.03589 )	( 1258	F 1	6JL1964	0.66074 )	( 1259	F 2	6JL1964	0.15493 )
( 1260	F 3	6JL1964	0.13370 )	( 1261	B 3	2AU1964	0.00196 )	( 1262	B 3	17AU1964	0.00210 )
( 1442	B 6	2AU1964	0.01706 )	( 1264	C* 1	10AU1964	0.07337 )	( 1265	C* 2	10AU1964	0.13189 )
( 1266	D 3	18AU1964	0.67700 )	( 1267	D 6	18AU1964	0.16645 )	( 1268	E 2	15AU1964	0.67020 )
( 1269	E 3	15AU1964	0.02467 )	( 1270	F 1	10AU1964	0.17155 )	( 1444	B 6	19SE1964	0.00606 )
( 1271	C 7	22SE1964	0.22198 )	( 1272	C* 1	10SE1964	0.00821 )	( 1273	C* 2	10SE1964	0.01075 )
( 1274	D 1	17SE1964	0.04222 )	( 1275	D 2	17SE1964	0.01935 )	( 1276	D 3	18SE1964	0.03353 )
( 1277	D 4	18SE1964	0.03718 )	( 1278	C 6	18SE1964	0.02690 )	( 1279	E 1	16SE1964	0.01178 )
( 1280	E 2	16SE1964	0.04085 )	( 1281	E 3	16SE1964	0.02355 )	( 1282	E 4	16SE1964	0.03224 )
( 1283	E 5	16SE1964	0.03065 )	( 1284	E 6	17SE1964	0.40352 )	( 1287	F 3	15SE1964	0.01001 )
( 1288	B 3	15OC1964	0.00435 )	( 1445	B 6	14OC1964	0.00578 )	( 1289	C 7	14OC1964	0.07475 )
( 1290	C* 1	16OC1964	0.01516 )	( 1291	C* 2	16OC1964	0.00734 )	( 1293	D 2	15OC1964	0.01415 )
( 1294	D 3	15OC1964	0.01648 )	( 1295	D 4	15OC1964	0.01189 )	( 1296	D 5	14OC1964	0.01574 )
( 1297	D 6	14OC1964	0.26655 )	( 1298	E 1	12OC1964	0.00269 )	( 1299	E 2	12OC1964	0.01571 )
( 1300	E 3	13OC1964	0.02148 )	( 1301	E 4	13OC1964	0.01766 )	( 1302	E 5	13OC1964	0.14576 )
( 1303	E 6	13OC1964	1.37132 )	( 1306	F 3	11OC1964	0.00277 )	( 1307	B 6	NC1964	0.05512 )
( 1308	C 7	6ND1964	0.13687 )	( 1309	C* 1	10NC1964	0.02251 )	( 1310	C* 2	10ND1964	0.00227 )
( 1311	D 1	8ND1964	0.00516 )	( 1312	D 2	8ND1964	0.00621 )	( 1313	D 3	9ND1964	0.01158 )
( 1314	D 4	9ND1964	0.01435 )	( 1315	D 5	9ND1964	0.02730 )	( 1316	D 6	9NC1964	0.37020 )
( 1317	E 1	6ND1964	0.00383 )	( 1318	E 2	7ND1964	0.01332 )	( 1319	E 3	7ND1964	0.01047 )
( 1320	E 4	7ND1964	0.01034 )	( 1321	E 5	7ND1964	0.02873 )	( 1322	E 6	7ND1964	0.46656 )
( 1323	F 1	6ND1964	0.00139 )	( 1336	C 3	27JA1967	0.01348 )	( 1337	C 3	2MR1967	1.13170 )
( 1338	C 3	28MR1967	0.80129 )	( 1339	C 5	28MR1967	0.15589 )	( 1340	C 7	28MR1967	1.06894 )
( 1341	A 3	19AP1967	0.91123 )	( 1342	A 4	19AP1967	0.25265 )	( 1343	A 6	19AP1967	0.68084 )
( 1344	C 3	25AP1967	0.21011 )	( 1345	C 5	25AP1967	0.08187 )	( 1346	C 7	21AP1967	0.15889 )
( 1347	E 2	23AP1967	1.25193 )	( 1348	E 5	23AP1967	0.11378 )	( 1368	A 3	4MY1967	0.05655 )
( 1369	A 4	4MY1967	0.00373 )	( 1370	A 6	3MY1967	0.23478 )	( 1373	C 7	5MY1967	0.00285 )
( 1374	E 2	7MY1967	0.01494 )	( 1375	E 3	7MY1967	0.00241 )	( 1376	E 5	6MY1967	0.01968 )
( 1408	A 3	23MY1967	0.00894 )	( 1409	A 4	23MY1967	0.00298 )	( 1411	C 3	31MY1967	0.02872 )
( 1412	C 5	31MY1967	0.00421 )	( 1413	C 7	25MY1967	0.00316 )	( 1414	E 2	28MY1967	0.02687 )
( 1415	E 3	28MY1967	0.00450 )	( 1416	E 5	28MY1967	0.03280 )	( 1431	A 3	12JN1967	1.19589 )
( 1432	A 4	13JN1967	0.12261 )	( 1433	C 3	17JN1967	0.24545 )	( 1434	C 5	17JN1967	0.01794 )
( 1435	C 7	13JN1967	0.73880 )	( 1436	E 2	15JN1967	1.85989 )	( 1437	E 3	15JN1967	0.01346 )
( 1438	E 5	14JN1967	0.00362 )	( 1446	A 3	11JL1967	1.88347 )	( 1447	A 4	11JL1967	0.65494 )
( 1448	A 6	10JL1967	10.64545 )	( 1449	C 3	16JL1967	0.22546 )	( 1450	C 5	16JL1967	0.03428 )
( 1451	C 7	16JL1967	14.19235 )	( 1452	E 2	14JL1967	20.11751 )	( 1453	E 3	15JL1967	0.35387 )
( 1454	E 5	15JL1967	2.38048 )	( 1510	C 7	24AU1967	0.16756 )	( 1511	E 2	1SE1967	5.66940 )
( 1512	E 3	1SE1967	0.49866 )	( 1513	E 5	31AU1967	0.09121 )	( 1534	A 6	19SE1967	0.04654 )
( 1536	E 2	24SE1967	8.78006 )	( 1537	E 3	24SE1967	3.32097 )	( 1538	E 5	23SE1967	2.12672 )
( 1539	C 3	4OC1967	0.00503 )	( 1541	E 2	11OC1967	1.24528 )	( 1542	E 3	11OC1967	0.98149 )
( 1543	E 5	10OC1967	0.10774 )	( 1377	GS 1	5MY1967	0.00396 )	( 1378	GS 2	9MY1967	0.02103 )
( 1379	GS 3	9MY1967	0.00619 )	( 1380	GS 4	9MY1967	0.02354 )	( 1382	GS 6	10MY1967	0.00278 )
( 1384	GS 8	10MY1967	0.00739 )	( 1385	GS 9	10MY1967	0.00471 )	( 1386	GS10	12MY1967	0.00287 )
( 1387	GS11	12MY1967	0.01584 )	( 1388	GS12	12MY1967	0.01207 )	( 1389	GS13	12MY1967	0.01547 )
( 1390	GS14	12MY1967	0.01174 )	( 1391	GS15	12MY1967	0.00479 )	( 1392	GS16	12MY1967	0.16334 )
( 1393	GS17	13MY1967	0.01918 )	( 1394	GS18	13MY1967	0.16170 )	( 1395	GS19	13MY1967	0.32882 )
( 1396	GS20	13MY1967	0.56972 )	( 1397	GS21	13MY1967	3.29642 )	( 1398	GS22	14MY1967	0.02125 )
( 1554	GS 1	3OC1967	6.47548 )	( 1555	GS 2	3OC1967	7.18808 )	( 1556	GS 3	3OC1967	0.04172 )
( 1557	GS 4	3OC1967	0.16069 )	( 1558	GS 5	4OC1967	0.05549 )	( 1559	GS 7	4OC1967	0.03148 )
( 1560	GS 8	4OC1967	0.08501 )	( 1561	GS 9	4OC1967	0.08217 )	( 1562	GS10	5OC1967	0.03454 )
( 1563	GS11	5OC1967	0.00701 )	( 1568	GS16	5OC1967	0.02453 )	( 1569	GS17	5OC1967	0.02527 )
( 1570	GS18	5OC1967	0.01983 )	( 1571	GS19	6OC1967	0.17796 )	( 1572	GS20	6OC1967	0.69399 )
( 1573	GS21	6OC1967	0.10527 )	( 1574	GS22	6OC1967	0.02301 )	( 1575	GS28	6OC1967	0.07225 )
( 1544	MU 1	2OC1967	0.10246 )	( 1547	MS 1	2OC1967	1.40519 )	( 1524	MI 1	20SE1967	0.15324 )
( 1546	LU 1	2OC1967	0.42015 )	( 1521	SH 1	18SE1967	0.02308 )	( 1523	RA 1	19SE1967	0.01845 )
( 1525	PW 1	20SE1967	0.04178 )	( 1526	MC 1	20SE1967	0.35842 )	( 1527	TR 1	20SE1967	0.08805 )
( 1528	SB 1	20SE1967	0.05775 )	( 1529	KW 1	20SE1967	0.04797 )	( 1530	FR 1	24SE1967	2.08021 )
( 1531	GH 1	25SE1967	0.00845 )	( 1545	WL 1	2OC1967	0.04054 )	( 1548	CA 1	3OC1967	0.01272 )
( 1549	MQ 1	4OC1967	0.06852 )	( 1551	ES 1	5OC1967	0.08787 )	( 1552	SM 1	6OC1967	0.41598 )
( 1550	MR 1	5OC1967	0.65667 )	( 1553	SG 1	6OC1967	0.80053 )	( 1428	MU 2	29MY1967	3.66386 )
( 1426	MS 2	29MY1967	18.64566 )	( 1351	MI 2	21AP1967	3.67417 )	( 1427	LU 2	29MY1967	5.61743 )
( 1417	HO 2	22MY1967	14.53567 )	( 1418	SH 2	22MY1967	0.07776 )	( 1350	BH 2	19AP1967	0.49338 )
( 1425	RA 2	25MY1967	1.34382 )	( 1399	PW 2	5MY1967	3.37323 )	( 1401	MO 2	6MY1967	2.44591 )
( 1402	TR 2	6MY1967	0.73099 )	( 1400	SB 2	6MY1967	1.71551 )	( 1352	KW 2	21AP1967	4.12300 )
( 1353	FR 2	23AP1967	4.21941 )	( 1354	GH 2	25AP1967	6.65573 )	( 1429	WL 2	29MY1967	22.93236 )
( 1403	CA 2	10MY1967	0.05231 )	( 1404	MC 2	10MY1967	0.05081 )	( 1405	ES 2	12MY1967	1.19324 )
( 1407	SM 2	14MY1967	7.35654 )	( 1349	CI 2	15AP1967	2.01164 )	( 1406	GB 2	13MY1967	0.02965 )
( 1419	BU 2	23MY1967	3.51520 )	( 1420	IH 2	23MY1967	1.78248 )	( 1421	CH 2	23MY1967	1.75225 )
( 1422	GA 2	23MY1967	2.86108 )	( 1423	WA 2	25MY1967	2.53501 )	( 1424	KN 2	25MY1967	3.62377 )
( 1430	MC 2	12JN1967	2.49198 )	(							

*Diatoma tenue* var. *pachycephala* Grun.

*Diatoma tenue* var. *pachycephala* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 50, fig. 15. 1881.

201 DITENUPP TOT NO OF STATICS 275

(146910	CH	OC1945	0.67506 )	(146921	CH	23NO1945	2.73235 )	(146908	CH	DE1945	6.87815 )
(146917	CH	12JA1946	4.55923 )	(146915	CH	20FE1946	1.72993 )	(146914	CH	19AP1946	0.41643 )
(146924	CH	10MY1946	0.89381 )	(146923	CH	22NO1946	0.12895 )	(146920	CH	20DE1946	0.03358 )
(146909	CH	MR1947	0.09107 )	(146912	CH	AP1947	0.02300 )	(146916	CH	4MY1947	6.41767 )

( 46906	CH	MY1947	6.85927 )	( 46919	CH	5JN1947	3.05762 )	( 46907	CH	JL1947	C.73720 )
( 46922	CH	21AU1947	0.03926 )	( 46758	EV	5JN1937	0.79880 )	( 46771	EV	11JN1937	1.93048 )
( 46743	EV	20JN1937	0.13274 )	( 46745	EV	3JL1937	0.06270 )	( 46770	EV	9JL1937	C.02982 )
( 46764	EV	17JL1937	0.16116 )	( 46757	EV	25JL1937	0.10110 )	( 46747	EV	1AU1937	C.01980 )
( 46763	EV	23AU1937	0.02029 )	( 46765	EV	30AU1937	0.04462 )	( 46760	EV	22SE1937	C.16249 )
( 46750	EV	24SE1937	0.29222 )	( 46744	EV	60C1937	4.36588 )	( 46748	EV	130C1937	C.08540 )
( 46767	EV	270C1937	0.14700 )	( 46749	EV	12MR1938	C.23061 )	( 46768	EV	16MR1938	0.13229 )
( 46762	EV	18MR1938	0.08822 )	( 46751	EV	30MR1938	1.25056 )	( 46772	EV	18AP1938	2.98084 )
( 46756	EV	27AP1938	11.61240 )	( 46759	EV	19MY1938	C.47265 )	( 46761	EV	27MY1938	0.33522 )
( 46766	EV	14DE1938	5.32319 )	( 1225	C 6	15MY1964	C.68601 )	( 1226	C 7	16MY1964	C.75909 )
( 1227	C* 2	13MY1964	0.10308 )	( 1228	D 2	14MY1964	0.03503 )	( 1229	D 5	14MY1964	C.13533 )
( 1230	E 2	16MY1964	0.08001 )	( 1231	E 3	16MY1964	0.01468 )	( 1232	E 5	16MY1964	C.01565 )
( 1233	B 3	5JN1964	0.25720 )	( 1234	B 3	18JN1964	0.23336 )	( 1235	C 7	16JN1964	C.05084 )
( 1439	B 6	5JN1964	0.30769 )	( 1236	C* 1	8JN1964	0.07876 )	( 1237	C* 2	8JN1964	C.16241 )
( 1238	D 3	11JN1964	0.02800 )	( 1239	D 4	11JN1964	0.00812 )	( 1240	D 6	10JN1964	C.00460 )
( 1241	E 2	13JN1964	0.04731 )	( 1242	E 3	13JN1964	0.00300 )	( 1243	E 6	13JN1964	C.10023 )
( 1244	F 1	11JN1964	0.11842 )	( 1245	F 2	11JN1964	C.01037 )	( 1246	F 3	11JN1964	C.00598 )
( 1247	B 3	14JL1964	0.31587 )	( 1248	B 3	24JL1964	C.06306 )	( 1440	B 6	11JL1964	C.05213 )
( 1441	B 6	24JL1964	0.30838 )	( 1249	C 3	8JL1964	0.44813 )	( 1250	C 6	10JL1964	C.52210 )
( 1251	C 7	16JL1964	0.40559 )	( 1252	C* 1	16JL1964	1.26918 )	( 1253	C* 2	16JL1964	C.23279 )
( 1254	D 2	15JL1964	0.26815 )	( 1255	D 5	15JL1964	C.20789 )	( 1256	E 2	14JL1964	C.28211 )
( 1257	E 3	14JL1964	0.08135 )	( 1258	F 1	6JL1964	0.53803 )	( 1259	F 2	6JL1964	C.55804 )
( 1260	F 3	6JL1964	0.17954 )	( 1261	B 3	2AU1964	0.01570 )	( 1262	B 3	17AU1964	0.01680 )
( 1442	B 6	2AU1964	C.89730 )	( 1443	B 6	16AU1964	0.13838 )	( 1263	C 7	15AU1964	C.01201 )
( 1264	C* 1	10AU1964	0.15639 )	( 1265	C* 2	10AU1964	0.04024 )	( 1266	D 3	18AU1964	0.08591 )
( 1267	D 6	18AU1964	0.05837 )	( 1268	E 2	15AU1964	0.17234 )	( 1269	E 3	15AU1964	C.04659 )
( 1270	F 1	10AU1964	0.09803 )	( 1271	C 7	22SE1964	0.03264 )	( 1272	C* 1	10SE1964	0.00821 )
( 1273	C* 2	10SE1964	0.07527 )	( 1274	D 1	17SE1964	0.00469 )	( 1275	D 2	17SE1964	C.03226 )
( 1276	D 3	18SE1964	0.03353 )	( 1277	D 4	18SE1964	0.00620 )	( 1278	D 6	18SE1964	1.74872 )
( 1279	E 1	16SE1964	0.02356 )	( 1280	E 2	16SE1964	0.00681 )	( 1281	E 3	16SE1964	C.05494 )
( 1282	E 4	16SE1964	0.07756 )	( 1283	E 5	16SE1964	0.10420 )	( 1284	E 6	17SE1964	C.61322 )
( 1285	F 1	15SE1964	0.03494 )	( 1286	F 2	15SE1964	0.02189 )	( 1287	F 3	15SE1964	C.02002 )
( 1288	B 3	150C1964	0.00218 )	( 1445	B 6	140C1964	C.13372 )	( 1289	C 7	140C1964	C.41335 )
( 1290	C* 1	160C1964	0.02274 )	( 1291	C* 2	160C1964	0.00489 )	( 1292	D 1	150C1964	0.01491 )
( 1293	D 2	150C1964	0.06603 )	( 1294	D 3	150C1964	0.42522 )	( 1295	D 4	150C1964	C.10703 )
( 1296	D 5	140C1964	0.27541 )	( 1297	D 6	140C1964	1.99916 )	( 1298	E 1	120C1964	0.01346 )
( 1299	E 2	120C1964	0.04084 )	( 1300	E 3	130C1964	0.05012 )	( 1301	E 4	130C1964	C.27819 )
( 1302	E 5	130C1964	0.28342 )	( 1303	E 6	130C1964	5.48528 )	( 1304	F 1	110C1964	C.00494 )
( 1305	F 2	110C1964	0.00173 )	( 1307	B 6	ND1964	0.38967 )	( 1308	C 7	6ND1964	1.06451 )
( 1309	C* 1	10ND1964	0.02251 )	( 1310	C* 2	10ND1964	0.01361 )	( 1311	D 1	8ND1964	C.01835 )
( 1312	D 2	8ND1964	0.21729 )	( 1313	D 3	9ND1964	C.62934 )	( 1314	D 4	9ND1964	C.44211 )
( 1315	D 5	9ND1964	0.60055 )	( 1316	D 6	9ND1964	0.52886 )	( 1317	E 1	6ND1964	C.26806 )
( 1318	E 2	7ND1964	C.29298 )	( 1319	E 3	7ND1964	C.15448 )	( 1320	E 4	7ND1964	0.14478 )
( 1321	E 5	7ND1964	0.74698 )	( 1322	E 6	7ND1964	C.77982 )	( 1323	F 1	6ND1964	0.00418 )
( 1324	F 2	6ND1964	0.00466 )	( 1325	F 3	6ND1964	0.05290 )	( 1336	C 3	27JA1967	0.01155 )
( 1337	C 3	2MR1967	0.82306 )	( 1338	C 3	28MR1967	0.92558 )	( 1339	C 5	28MR1967	C.12783 )
( 1340	C 7	28MR1967	1.83247 )	( 1341	A 3	19AP1967	1.51872 )	( 1342	A 4	19AP1967	1.51589 )
( 1343	A 6	19AP1967	0.92400 )	( 1344	C 3	25AP1967	0.12904 )	( 1345	C 5	25AP1967	C.12280 )
( 1346	C 7	21AF1967	0.70100 )	( 1347	E 2	23AP1967	0.83570 )	( 1348	E 5	23AP1967	C.15764 )
( 1368	A 3	4MY1967	0.04084 )	( 1369	A 4	4MY1967	C.00373 )	( 1370	A 6	3MY1967	C.24399 )
( 1372	C 5	5MY1967	0.00355 )	( 1373	C 7	5MY1967	0.00856 )	( 1374	E 2	7MY1967	C.01494 )
( 1375	E 3	7MY1967	0.00241 )	( 1376	E 5	6MY1967	0.00843 )	( 1408	A 3	23MY1967	C.06708 )
( 1409	A 4	23MY1967	0.00595 )	( 1410	A 6	24MY1967	0.07330 )	( 1411	C 3	31MY1967	C.00821 )
( 1412	C 5	31MY1967	0.00421 )	( 1413	C 7	25MY1967	0.06318 )	( 1414	E 2	28MY1967	C.04366 )
( 1415	E 3	28MY1967	0.00225 )	( 1416	E 5	28MY1967	0.01093 )	( 1431	A 3	12JN1967	C.99132 )
( 1432	A 4	13JN1967	0.17881 )	( 1433	C 3	17JN1967	0.38109 )	( 1434	C 5	17JN1967	C.01455 )
( 1435	C 7	13JN1967	0.24311 )	( 1436	E 2	15JN1967	0.15198 )	( 1438	E 5	14JN1967	C.02542 )
( 1446	A 3	11JL1967	0.62619 )	( 1447	A 4	11JL1967	0.53331 )	( 1448	A 6	10JL1967	C.50539 )
( 1449	C 3	16JL1967	1.33746 )	( 1450	C 5	16JL1967	0.66648 )	( 1451	C 7	16JL1967	3.85812 )
( 1452	E 2	14JL1967	3.12939 )	( 1453	E 3	15JL1967	C.20979 )	( 1454	E 5	15JL1967	C.16603 )
( 1504	A 3	28AU1967	0.00247 )	( 1509	C 5	25E1967	0.64096 )	( 1511	E 2	1SE1967	C.25478 )
( 1512	E 3	1SE1967	0.02749 )	( 1513	E 5	31AU1967	0.08615 )	( 1534	A 6	19SE1967	C.01551 )
( 1536	E 2	24SE1967	0.09271 )	( 1537	E 3	24SE1967	0.03019 )	( 1538	E 5	23SE1967	0.02762 )
( 1541	F 2	110C1967	0.03193 )	( 1542	E 3	110C1967	C.00509 )	( 1543	E 5	100C1967	C.01437 )
( 1379	GS 3	9MY1967	0.02476 )	( 1380	GS 4	9MY1967	0.64739 )	( 1381	GS 5	10MY1967	C.16696 )
( 1383	GS 7	10MY1967	0.04544 )	( 1384	GS 8	10MY1967	0.02773 )	( 1385	GS 9	10MY1967	C.03296 )
( 1386	GS10	12MY1967	0.02011 )	( 1387	GS11	12MY1967	0.05545 )	( 1388	GS12	12MY1967	C.01207 )
( 1389	GS13	12MY1967	0.00516 )	( 1390	GS14	12MY1967	0.02349 )	( 1392	GS16	12MY1967	0.04315 )
( 1393	GS17	13MY1967	0.01918 )	( 1394	GS18	13MY1967	0.15653 )	( 1395	GS19	13MY1967	C.32882 )
( 1396	GS20	13MY1967	0.00666 )	( 1397	GS21	13MY1967	0.14389 )	( 1398	GS22	14MY1967	2.12527 )
( 1554	GS 1	30C1967	0.33445 )	( 1555	GS 2	30C1967	C.17302 )	( 1556	GS 3	30C1967	C.01043 )
( 1561	GS 9	40C1967	0.01174 )	( 1562	GS10	50C1967	0.01727 )	( 1563	GS11	50C1967	C.00701 )
( 1564	GS12	50C1967	0.00823 )	( 1565	GS13	50C1967	0.00507 )	( 1568	GS16	50C1967	C.15584 )
( 1569	GS17	50C1967	0.00743 )	( 1571	GS19	60C1967	0.02868 )	( 1572	GS20	60C1967	C.00180 )
( 1573	GS21	60C1967	0.00336 )	( 1574	GS22	60C1967	0.00863 )	( 1544	MU 1	20C1967	C.00238 )
( 1547	MS 1	20C1967	0.03194 )	( 1526	MQ 1	20SE1967	0.01707 )	( 1527	TR 1	20SE1967	C.01887 )
( 1528	SB 1	20SE1967	0.01444 )	( 1529	KW 1	20SE1967	C.02398 )	( 1530	FR 1	24SE1967	0.04000 )
( 1545	WL 1	20C1967	0.00676 )	( 1549	MQ 1	40C1967	0.02741 )	( 1551	ES 1	50C1967	C.19970 )
( 1552	SM 1	60C1967	0.07923 )	( 1553	SG 1	60C1967	C.08079 )	( 1428	MU 2	29MY1967	C.15668 )
( 1426	MS 2	29MY1967	2.01575 )	( 1351	MI 2	21AP1967	4.31963 )	( 1427	LU 2	25MY1967	C.50847 )
( 1417	HO 2	22MY1967	1.01690 )	( 1418	SH 2	22MY1967	0.01555 )	( 1350	BH 2	19AP1967	C.00441 )
( 1425	RA 2	25MY1967	0.10605 )	( 1399	PW 2	5MY1967	3.37323 )	( 1401	MO 2	6MY1967	1.04069 )
( 1402	TR 2	6MY1967	1.55945 )	( 1400	SB 2	6MY1967	2.85918 )	( 1352	KW 2	21AP1967	9.20804 )
( 1353	FR 2	23AP1967	0.07384 )	( 1354	GH 2	25AP1967	C.27617 )	( 1429	WL 2	29MY1967	C.58737 )
( 1403	CA 2	10MY1967	2.09232 )	( 1404	MQ 2	10MY1967	0.24136 )	( 1405	ES 2	12MY1967	C.54180 )
( 1407	SM 2	14MY1967	2.57957 )	( 1419	BU 2	23MY1967	0.55771 )	( 1420	IH 2	23MY1967	1.40483 )
( 1421	CH 2	23MY1967	1.75225 )	( 1422	GA 2	23MY1967	1.47141 )	( 1423	WA 2	25MY1967	C.85068 )
( 1424	KN 2	25MY1967	0.38636 )	( 1430	MC 2	12JN1967	C.19738 )	(			

*Diatoma vulgare* Bory

*Diatoma vulgare* Bory, Dict. Class. Hist. Nat., 5:461. 1824.



## 202 DIVULGAR TCT NO CF STATIONS 73

(46921	CH	23NO1945	0.03816 )	(46517	CH	12JA1946	0.01137 )	(46915	CH	20FE1946	C.CC565 )
(46914	CH	19AP1946	0.00961 )	(46524	CH	10MY1946	0.05079 )	(46923	CH	22NO1946	C.C3934 )
(46920	CH	20DE1946	0.00863 )	(46505	CH	JAI1947	0.00245 )	(46909	CH	MR1947	C.CC455 )
(46916	CH	4MY1947	0.00136 )	(46519	CH	5JN1947	0.01214 )	(46758	EV	5JN1937	C.C33521 )
(46771	EV	11JN1937	0.01426 )	(46743	EV	20JN1937	0.11989 )	(46770	EV	9JL1937	C.C5367 )
(46764	EV	17JL1937	0.05641 )	(46757	EV	25JL1937	0.00963 )	(46747	EV	1AU1937	C.C0495 )
(46750	EV	24SE1937	0.00471 )	(46748	EV	13OC1937	0.02135 )	(46767	EV	27OC1937	C.C0774 )
(46761	EV	27MY1938	0.00273 )	(46766	EV	14DE1938	0.01584 )	(1300	E 3	13OC1964	C.CC358 )
(1304	F 1	11OC1964	0.00247 )	(1341	A 3	19AP1967	C.00217 )	(1348	E 5	23AP1967	C.CC137 )
(1371	C 3	4MY1967	0.00462 )	(1415	E 3	28MY1967	0.00225 )	(1432	A 4	13JN1967	C.C0255 )
(1532	A 3	18SE1967	0.02300 )	(1541	E 2	11OC1967	C.00532 )	(1382	GS 6	10MY1967	C.CC278 )
(1387	GS11	12MY1967	0.00396 )	(1392	GS16	12MY1967	0.00308 )	(1355	GS19	13MY1967	C.CC117 )
(1554	GS 1	30C1967	0.01779 )	(1555	GS 2	30C1967	C.00353 )	(1559	GS 7	40C1967	C.CC350 )
(1564	GS12	50C1967	0.00494 )	(1569	GS17	50C1967	C.00297 )	(1570	GS18	50C1967	C.CC992 )
(1571	GS19	60C1967	0.00117 )	(1573	GS21	60C1967	0.00224 )	(1574	GS22	60C1967	C.CC288 )
(1575	GS28	60C1967	0.00129 )	(1544	MU 1	20C1967	0.00238 )	(1547	MS 1	20C1967	C.C3992 )
(1524	MI 1	20SE1967	0.02189 )	(1546	LU 1	20C1967	0.00500 )	(1521	SH 1	18SE1967	C.C68082 )
(1522	BH 1	18SE1967	0.00912 )	(1530	FR 1	24SE1967	0.04000 )	(1531	GH 1	25SE1967	C.C0381 )
(1545	WL 1	20C1967	0.02703 )	(1550	MR 1	50C1967	C.16107 )	(1428	MU 2	29MY1967	C.C3917 )
(1426	MS 2	29MY1967	0.20997 )	(1351	MI 2	21AP1967	0.00310 )	(1427	LU 2	29MY1967	C.C3898 )
(1417	MO 2	22MY1967	0.01122 )	(1418	SH 2	22MY1967	0.34215 )	(1350	BH 2	15AP1967	C.C4405 )
(1399	PW 2	5MY1967	0.01360 )	(1401	MG 2	6MY1967	0.01176 )	(1402	TR 2	6MY1967	C.C01083 )
(1400	SB 2	6MY1967	0.05361 )	(1353	FR 2	23AP1967	0.05274 )	(1354	GH 2	25AP1967	C.C01208 )
(1429	WL 2	29MY1967	0.03185 )	(1403	CA 2	10MY1967	0.28769 )	(1405	ES 2	12MY1967	C.CC645 )
(1406	GB 2	13MY1967	0.00809 )	(							

*Diatoma vulgaris* var. *brevis* Grun.

*Diatoma vulgare* var. *breve* Grunow, Verh. Zool.-Bot. Ges. Wien, 12:363. 1862.

## 203 DIVULGAR TCT NO CF STATIONS 6

(46758	EV	5JN1937	0.00357 )	(1236	C* 1	8JN1964	C.C0350 )	(1264	C* 1	10AU1964	C.CC193 )
(1341	A 3	19AP1967	0.00217 )	(1567	GS15	50C1967	0.00159 )	(1521	SH 1	18SE1967	C.CC2885 )

*Diatoma vulgaris* var. *linearis* V. H.

*Diatoma vulgare* var. *linearis* Van Heurck, Syn. Diat. Belgique, pl. 50, figs. 7-8. 1881.

## 205 DIVULGVL TOT NO CF STATIONS 3

(1392	GS16	12MY1967	0.00616 )	(1549	MO 1	40C1967	0.12334 )	(1407	SM 2	14MY1967	C.CC597 )
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Genus *Diploneis* Ehr.

Ehrenberg, Ber. Akad. Wiss. Berlin, 1844:84. 1844.

Members of the genus *Diploneis* find their primary habitat in epipelagic communities. Only occasional, isolated specimens are found in our collections.

*Diploneis boldtiana* Cleve

*Diploneis boldtiana* Cleve, Acta Soc. Fauna Fl. Fennica, 8(2):43, pl. 2, fig. 12. 1891.

## 206 DPBCLDTI TCT NO OF STATIONS 18

(60973	CH	1876	0.02362 )	(3540	CH	11MY1879	0.00466 )	(3541	CH	1FE1881	C.C03913 )
(46910	CH	0C1945	0.00328 )	(46521	CH	23NO1945	0.00065 )	(46908	CH	DE1945	C.C01007 )
(46914	CH	19AP1946	0.00214 )	(46516	CH	4MY1947	0.00068 )	(46922	CH	21AU1947	C.CC194 )
(46758	EV	5JN1937	0.00357 )	(46764	EV	17JL1937	0.00806 )	(46757	EV	25JL1937	C.CC481 )
(46747	EV	1AU1937	0.00248 )	(46768	EV	16MR1938	0.01470 )	(1563	GS11	50C1967	C.CC234 )
(1565	GS13	50C1967	0.00507 )	(1567	GS15	50C1967	0.00159 )	(1530	FR 1	24SE1967	C.CC1000 )

*Diploneis domblittensis* (Grun.) Cleve

*Navicula expleta* var. *domblittensis* Grunow in: Mojsisovics and Neumayer, Beitr. Paläontol. Österreich-Ungarns, Bd. 2, Heft 4, p. 156, pl. 30, fig. 60. 1882.

*Diploneis domblittensis* (Grun.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):91, pl. 2, fig. 2. 1894.

207. DPDOMBLQ TOT NO OF STATIONS 1  
( 1389 GS13 12MY1967 0.00258 ) (

*Diploneis elliptica* (Kütz.) Cleve

*Navicula elliptica* Kützing, Bacill., p. 98, pl. 30, fig. 55. 1844.

*Diploneis elliptica* (Kütz.) Cleve, Acta Soc. Fauna Fl. Fennica, 8(2):42. 1891.

208. DPELLIPT TOT NO OF STATIONS 7  
( 46905 CH MR1947 0.00455 ) ( 46516 CH 4MY1947 0.00034 ) ( 46907 CH JL1947 0.00148 )  
( 1559 GS 7 40C1967 0.00350 ) ( 1565 GS13 50C1967 0.01014 ) ( 1567 GS15 50C1967 0.00476 )  
( 1403 CA 2 10MY1967 0.01308 ) (

*Diploneis oblongella* (Naeg.) Ross

*Navicula oblongella* Naegleii ex Kützing, Sp. Alg., p. 890. 1849.

*Diploneis oblongella* (Naeg.) Ross, Natl. Mus. Canada Bull., 97:212. 1947.

Coll: 1405

*Diploneis oculata* (Bréb.) Cleve

*Navicula oculata* de Brébisson, J. Quekett Micr. Club, 2:38, fig. 5. 1870.

*Diploneis oculata* (Bréb.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd 26(2):92. 1894.

209. DPOCULAT TOT NO OF STATIONS 9  
( 46906 CH NY1947 0.00066 ) ( 46767 EV 270C1937 0.00387 ) ( 1245 F 2 11JN1964 0.00346 )  
( 1260 F 3 6JL1964 0.00191 ) ( 1285 F 1 15SE1964 0.00582 ) ( 1389 GS13 12MY1967 0.00258 )  
( 1395 GS15 13MY1967 0.00117 ) ( 1554 GS 1 30C1967 0.00356 ) ( 1565 GS13 50C1967 0.00342 )

*Diploneis ovalis* (Hilse) Cleve

*Pinnularia ovalis* Hilse, Jahres-Ber. Schlesischen Ges. Vaterl. Kult., 36:82. 1860.

*Diploneis ovalis* (Hilse) Cleve, Acta Soc. Fauna Fl. Fennica, 8(2):44, pl. 2, fig. 13. 1891.

210. DPOVALIS TOT NO OF STATIONS 6  
( 60973 CH 1876 0.04724 ) ( 46524 CH 10MY1946 0.00071 ) ( 1285 F 1 15SE1964 0.01165 )  
( 1304 F 1 110C1964 0.00247 ) ( 1389 GS13 12MY1967 0.00774 ) ( 1354 GH 2 25AP1967 0.00173 )

*Diploneis parma* Cleve

*Diploneis parma* Cleve, Acta Soc. Fauna Fl. Fennica, 8(2):43, pl. 2, fig. 10. 1891.

211 DPPARMA TCT NO OF STATIONS 20											
(46910	CH	0C1945	0.00109 )	(46517	CH	12JA1946	0.00083 )	(46914	CH	19AP1946	0.00107 )
(46924	CH	10MY1946	0.00141 )	(46520	CH	20DE1946	0.00031 )	(46905	CH	JA1947	0.00123 )
(46906	CH	MY1947	0.00066 )	(46522	CH	21AU1947	0.00145 )	( 1385	GS 9	10MY1967	0.00235 )
( 1389	GS13	12MY1967	0.00516 )	( 1390	GS14	12MY1967	0.01174 )	( 1353	GS17	13MY1967	0.00274 )
( 1564	GS12	50C1967	0.00165 )	( 1565	GS13	50C1967	0.03042 )	( 1567	GS15	50C1967	0.00635 )
( 1569	GS17	50C1967	0.00149 )	( 1574	GS22	60C1967	0.00575 )	( 1575	GS28	60C1967	0.00258 )
( 1546	LU 1	20C1967	0.00500 )	( 1354	GH 2	25AP1967	0.00173 )	(			

*Diploneis subovalis* Cleve

*Diploneis subovalis* Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):96, pl. 1, fig. 27. 1894.

212 DPSUBOVA TOT NO OF STATIONS 3											
(46747	EV	1AU1937	0.00248 )	( 1388	GS12	12MY1967	0.01207 )	( 1565	GS13	50C1967	0.02028 )

*Species incertae sedis*

*Diploneis* sp. #1.

213 DPSPECCA TOT NO OF STATIONS 2										
( 1567	GS15	50C1967	0.00159 )	( 1568	GS16	50C1967	0.00144 )	(		

*Diploneis* sp. #2.

214 DPSPECOB TOT NO OF STATIONS 2										
( 1545	WL 1	20C1967	0.00676 )	( 1350	BH 2	19AP1967	0.00220 )	(		

Genus *Epithemia* Bréb.

de Brébisson and Godey, Consid. Diat., p. 16. 1838.

Members of the genus *Epithemia* are particularly adapted for epiphytic growth, usually on the coarser attached algae or on aquatic higher plants. Only occasional isolated specimens appear in our collections.

*Epithemia andrewsii* nom. nov.

*Epithemia irregularis* Andrews, U. S. Geol. Surv. Prof. Paper 523A:22, pl. 3, fig. 22-25. 1966. (non Fritsch and Rich 1925).

215 EPANDREW TOT NO OF STATIONS 2										
(60973	CH	1876	0.02362 )	(46917	CH	12JA1946	0.00028 )	(		

*Epithemia argus* (Ehr.) Klitz.

*Eunotia argus* Ehrenberg, Ber. Akad. Wiss. Berlin, 1841:125, pl. 2(4), fig. 7. 1843.

*Epithemia argus* (Ehr.) Kützinger, Bacill., p. 35, pl. 29, figs. 55-56. 1844.

Coll: 1092.

*Epithemia argus* var. *alpestris* (Wm. Smith) Grun.

*Epithemia alpestris* Wm. Smith, Syn. British Diat., Vol. 1, p. 13, pl. 1, fig. 7. 1853.

*Epithemia argus* var. *alpestris* (Wm. Smith) Grunow, Verh. Zool.-Bot. Ges. Wien, 12:329, pl. 3, fig. 28. 1862.

216 EPARGUVA TOT NO OF STATIONS 1									
( 3541	CH		1FE1881	0.00978	)	(			

*Epithemia argus* var. *longicornis* (Ehr.) Grun.

*Epithemia longicornis* Ehrenberg ex Pritchard, Hist. Infus., p. 760, pl. 15, figs. 6-9. 1852.

*Epithemia argus* var. *longicornis* (Ehr.) Grunow, Verh. Zool.-Bot. Ges. Wien, 12:329. 1862.

Coll: 1092.

*Epithemia intermedia* Fricke

*Epithemia intermedia* Fricke in: A. Schmidt, Atlas Diat., pl. 249, figs. 14-18. 1904.

217 EPINTERM TOT NO OF STATIONS 5													
( 60973	CH	1876	0.14171	)	( 46906	CH	MY1947	0.00066	)	( 1567	GS15	50C1967	0.00159
( 1552	SM 1	60C1967	0.00660	)	( 1401	MO 2	6MY1967	0.00588	)	(			

*Epithemia smithii* Carruthers

*Epithemia proboscidea* Wm. Smith, Syn. British Diat., Vol. 1, p. 13, pl. 1, fig. 8. 1853. (non Kütz. 1844).

*Epithemia smithii* Carruthers in: Gray, Handb. British Freshw. Weeds, p. 76. 1864.

218 EPSMITHI TOT NO OF STATIONS 6													
( 60973	CH	1876	0.02362	)	( 3541	CH	1FE1881	0.00978	)	( 46924	CH	10MY1946	0.00071
( 46763	EV	23AU1937	0.02029	)	( 1285	F 1	15SE1964	0.01165	)	( 1574	GS22	60C1967	0.00288

219 EPSOREXQ TOT NO OF STATIONS 6													
( 1389	GS13	12MY1967	0.00258	)	( 1396	GS20	13MY1967	0.00074	)	( 1574	GS22	60C1967	0.00288
( 1531	GH 1	25SE1967	0.00845	)	( 1545	WL 1	20C1967	0.00676	)	( 1550	MR 1	50C1967	0.03717

*Epithemia turgida* (Ehr.) Kütz.

*Navicula turgida* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1830:64. 1832.

*Epithemia turgida* (Ehr.) Kützing, Bacill., p. 34, pl. 5, fig. 14. 1844.

220 EPTURGID TOT NO OF STATIONS 9													
( 3541	CH	1FE1881	0.03913	)	( 46752	EV	15SE1937	0.02177	)	( 1279	E 1	16SE1964	0.00393
( 1555	GS 2	30C1967	0.00353	)	( 1565	GS13	50C1967	0.00507	)	( 1567	GS15	50C1967	0.00318
( 1574	GS22	60C1967	0.01151	)	( 1575	GS28	60C1967	0.00129	)	( 1352	KW 2	21AP1967	0.00859

*Epithemia zebra* (Ehr.) Klütz.

*Navicula zebra* Ehrenberg, Abh. Akad. Wiss. Berlin, 1833:262. 1835.

*Epithemia zebra* (Ehr.) Kützing, Bacill., p. 34, pl. 5, fig. 7(6)a-c. 1844.

222 EPZEBRA TCT NO OF STATIONS 4											
(60973	CH	1876	0.04724 )	( 3541	CH	1FE1881	0.02935 )	( 1574	GS22	60C1567	C.0C288 )
( 1529	KW 1	20SE1967	0.02398 )	(							

*Epithemia zebra* var. *porcellus* (Kütz.) Grun.

*Epithemia porcellus* Kützing, Bacill., p. 34, pl. 5, figs. 18-19. 1844.

*Epithemia zebra* var. *porcellus* (Kütz.) Grunow, Verh. Zool.-Bot. Ges.

Wien, 12:328, pl. 6, figs. 3-4. 1862.

221 EPZERRVP TCT NO OF STATIONS 6											
(60973	CH	1876	0.02362 )	(46757	EV	25JL1937	0.00481 )	( 1369	A 4	4MY1967	C.0C373 )
( 1545	WL 1	20C1567	0.00676 )	( 1550	MR 1	50C1967	0.01239 )	( 1401	MO 2	6MY1967	C.01176 )

#### Genus *Eucocconeis* Cleve

Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 27(3):173. 1895.

Members of the genus *Eucocconeis* are most abundant in benthic communities. Only occasional specimens are noted in our collections.

*Eucocconeis flexella* (Kütz.) Hust.

*Cymbella? flexella* Kützing, Bacill., p. 80, pl. 4, fig. 14. 1844.

*Eucocconeis flexella* (Kütz.) Hustedt in: Pascher, Süßw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 193, fig. 270. 1930.

223 EUFLEXEL TCT NO OF STATIONS 22											
(46924	CH	10MY1946	0.00071 )	(46516	CH	4MY1947	0.02579 )	(46906	CH	MY1947	C.0C066 )
(46919	CH	5JN1947	0.02276 )	( 1258	F 1	6JL1964	0.00472 )	( 1279	E 1	16SE1964	0.00393 )
( 1285	F 1	15SE1964	0.02912 )	( 1286	F 2	15SE1964	C.01C95 )	( 1387	GS11	12MY1967	C.0C396 )
( 1388	GS12	12MY1967	0.04223 )	( 1389	GS13	12MY1967	C.01031 )	( 1390	GS14	12MY1967	C.01174 )
( 1392	GS16	12MY1967	0.00308 )	( 1253	GS17	13MY1967	C.0C274 )	( 1394	GS18	13MY1967	C.0C172 )
( 1565	GS13	50C1967	0.01014 )	( 1567	GS15	50C1967	0.00794 )	( 1569	GS17	50C1967	C.0C297 )
( 1574	GS22	60C1967	C.00575 )	( 1550	MR 1	50C1967	C.02478 )	( 1403	CA 2	10MY1967	C.05231 )
( 1404	MO 2	10MY1967	0.03811 )	(							

*Eucocconeis flexella* var. *alpestris* (Brun) Hust.

*Achnanthes flexella* var. *alpestris* Brun, Diat. Alpes et Jura, p. 30, fig. 26. 1880.

*Eucocconeis flexella* var. *alpestris* (Brun) Hustedt in: Pascher, Süßw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 193, fig. 271. 1930.

224 EUFLEXVA TCT NO OF STATIONS 8											
( 1565	GS13	50C1967	C.03042 )	( 1551	ES 1	50C1967	C.00799 )	( 1550	MR 1	50C1967	C.06195 )
( 1426	MS 2	29MY1967	0.01050 )	( 1417	HO 2	22MY1967	0.01122 )	( 1350	BH 2	19AP1967	C.0C661 )
( 1405	ES 2	12MY1967	C.01935 )	( 1407	SP 2	14MY1967	C.01194 )	(			

*Eucocconeis lapponica* Hust.

*Eucocconeis lapponica* Hustedt, Naturw. Untersuch. Sarekgebirges Schwedisch-Lappland, Bd. 3, Bot. Heft 6, p. 549, pl. 17, figs. 8-9. 1924.

225	EULAPPCN	TOT NO OF STATIONS	1
(46757	EV	25JL1937	0.00481 ) (

*Eucocconeis lapponica* var. *ninckei* (Reim.) Comb. nov.

*Achnanthes ninckei* Guermeur and Manguin, Österreichische Bot. Zeitschr., 100(4/5):541, pl. 1, figs. 10-11. 1953.

*Achnanthes lapponica* var. *ninckei* (Guer. and Mang.) Reimer in: Patrick and Reimer, Acad. Nat. Sci. Philadelphia Monogr., 13:259, pl. 16, figs. 29-30. 1966.

226	EULAPPVN TOT NO CF STATIONS			26							
(46758	EV	5JN1937	0.00713 )	(46757	EV	25JL1937	0.00481 )	(46763	EV	23AU1937	C.08117 )
(46752	EV	15SE1937	0.02177 )	(46762	EV	18MR1938	0.04411 )	(1270	F 1	10AU1964	C.00272 )
(1285	F 1	15SE1964	0.00582 )	(1304	F 1	11CC1964	0.00247 )	(1354	GS18	13MY1967	C.00172 )
(1565	GS13	50C1967	0.01014 )	(1567	GS15	50C1967	0.00159 )	(1572	GS20	60C1967	C.00090 )
(1574	GS22	60C1967	0.02013 )	(1575	GS28	60C1967	0.00129 )	(1527	TR 1	20SE1967	C.00629 )
(1529	KW 1	20SE1967	0.01199 )	(1552	SM 1	60C1967	0.00660 )	(1550	MR 1	50C1967	C.18585 )
(1426	MS 2	25MY1967	0.01050 )	(1350	BH 2	19AP1967	0.00220 )	(1400	SB 2	6MY1967	C.00596 )
(1403	CA 2	10MY1967	0.05231 )	(1404	MC 2	10MY1967	0.05081 )	(1405	ES 2	12MY1967	C.01290 )
(1407	SM 2	14MY1967	0.00597 )	(1421	CH 2	23MY1967	0.01735 )	(			

#### Genus *Eunotia* Ehr.

Ehrenberg, Ber. Akad. Wiss. Berlin, 1837:44. 1837.

Members of the genus *Eunotia* find their primary habitat in benthic communities. The majority of species are found only in waters of relatively low pH and total dissolved solids. The specimens taken in the Lake Michigan plankton are undoubtedly derived from either benthic habitats in the lake or, more likely, from streams entering the lake,

*Eunotia arcus* Ehr.

*Eunotia arcus* Ehrenberg, Ber. Akad. Wiss. Berlin, 1837:45. 1837.

227	ENARCUS	TOT NO OF STATIONS	1
(1565	GS13	50C1967	0.00507 ) (

*Eunotia arcus* var. *bidens* Grun.

*Eunotia arcus* var. *bidens* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 34, fig. 7. 1881.

229 ENARCVB TOT NO CF STATIONS 3											
( 1388	GS12	12MY1967	0.00603 )	( 1524	MI 1	20SE1967	0.02189 )	( 1404	MC 2	10MY1967	C.02541 )

*Eunotia arcus* var. *fallax* Hust.

*Eunotia arcus* var. *fallax* Hustedt in: Süssw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 175, fig. 219. 1930.

228	ENARCVF	TOT NO OF STATIONS	1
(46768	EV	16MR1938	0.01470 ) (

*Eunotia curvata* (Kütz.) Lagerst.

*Synedra lunaris* Ehrenberg, Abh. Akad. Wiss. Berlin, 1831:87. 1832.

*Exilaria curvata* Kützing, Alg. Dec., No. 112. 1834.

*Eunotia lunaris* (Ehr.) Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 35, figs. 3-4. 1881. (non de Brébisson, 1864).

*Eunotia curvata* (Kütz.) Lagerstedt, Öfv. K. Svenska Vet.-Akad. Förh., 41(2):61. 1884.

230	ENCURVAT	TOT NO OF STATIONS	2
( 1550	MR 1	50C1967 0.01239 )	( 1427 LU 2 29MY1967 0.01211 ) (

*Eunotia diodon* Ehr.

*Eunotia diodon* Ehrenberg, Ber. Akad. Wiss. Berlin, 1837:45. 1837.

231	ENDIGDON	TCT NO OF STATIONS	1
( 1404	MQ 2	10MY1967 0.01270 )	(

*Eunotia exigua* (Bréb.) Rabh.

*Himantidium exiguum* de Brébisson ex Kützing, Sp. Alg., p. 8. 1849.

*Eunotia exigua* (Bréb.) Rabenhorst, Fl. Europaea Alg., Sect. 1, p. 73. 1864.

Coll: 1404.

*Eunotia flexuosa* Bréb.

*Eunotia flexuosa* de Brébisson ex Kützing, Sp. Alg., p. 6. 1849.

232	ENFLEXUO	TOT NO OF STATIONS	1
( 1574	GS22	60C1967 0.00288 )	(

*Eunotia incisa* Wm. Smith

*Eunotia incisa* Wm. Smith ex Gregory, Quart. J. Micr. Sci., 2:96, pl. 4, fig. 4. 1854.

233	ENINCISA	TCT NO OF STATIONS	1
( 1417	HO 2	22MY1967 0.00374 )	(

*Eunotia naegelii* Migula

*Eunotia naegelii* Migula in: Thomé, Fl. Deutschland, 2(1):203. 1907.

234	ENNAEGEL	TCT NO OF STATIONS	1
( 1404	MQ 2	10MY1967 0.06352 )	(

*Eunotia pectinalis* (O. F. Müll.) Rabh.

*Conferva pectinalis* O. F. Müller, Nova Octa Acad. Sci. Petropolitane, 3(Hist.):91, pl. 1, figs. 4-7. 1788.

*Eunotia pectinalis* (O. F. Müll.) Rabenhorst, Fl. Europaea Alg., Sect. 1, p. 73. 1864.

Coll: 1404.

*Eunotia praerupta* Ehr.

*Eunotia praerupta* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:414. 1843.

235 ENPRAERU TCT NO OF STATIONS 4											
( 1304	F 1	11CC1964	0.00247 )	( 1388	GS12	12MY1967	0.00603 )	( 1569	GS17	5CC1967	0.00149 )
( 1553	SG 1	60C1967	0.00734 )	(				(			

*Eunotia serra* Ehr.

*Eunotia serra* Ehrenberg, Ber. Akad. Wiss. Berlin, 1837:45. 1837.

Coll: 1092.

*Eunotia trinacria* Krasske

*Eunotia trinacria* Krasske, Bot. Arch., 27:349, fig. 1. 1929.

236 EATRINAC TCT NO OF STATIONS 1											
( 1404	MO 2	10MY1967	0.01270 )	(				(			

Genus *Fragilaria* Lyngb.

Lyngbye, Tent. Hydrophyt. Danicae, p. 182. 1819.

*Fragilaria brevistriata* Grun.

*Fragilaria brevistriata* Grunow in: Van Heurck, Syn. Diat. Belgique, p. 157, pl. 45, fig. 32. 1885.

Cells rectangular, in life united by the valve faces into band-shaped colonies of varying length. Valves linear with subrostrate apices, specimens from Lake Michigan 10-30 $\mu$  long, 3-5 $\mu$  broad. The striae are short, marginal, slightly radiate, about 13-16 in 10 $\mu$ . Due to the shortening of the striae the pseudoraphe is a broad, linear-lanceolate space, without ornamentation, occupying most of the valve surface.

Most of our records of this taxon come from inshore areas in Lake Michigan. Published records indicate that it reaches its greatest abundance in smaller mesotrophic to eutrophic lakes.

237 FRBREVIS TCT NO OF STATIONS 55											
160973	CH	1876	0.04724 )	(46521	CH	23NO1945	0.00129 )	(46909	CH	MR1947	0.00455 )
(46906	CH	MY1947	0.00066 )	(46763	EV	23AU1937	0.02029 )	( 1227	C 2	13MY1964	0.00110 )
( 1253	C 2	16.11.1964	0.00228 )	( 1275	D 2	17SF1964	0.00645 )	( 1279	E 1	16SE1964	0.01178 )



( 1284	E 6	17SE1964	0.00318 )	( 1285	F 1	15SE1964	0.01747 )	( 1292	D 1	15OC1964	0.00373 )
( 1304	F 1	11CC1964	0.00247 )	( 1342	A 4	19AP1967	0.00361 )	( 1411	C 3	31MY1967	C.00410 )
( 1538	E 5	23SE1967	0.00552 )	( 1388	GS12	12MY1967	0.01207 )	( 1389	GS13	12MY1967	C.00258 )
( 1390	GS14	12MY1967	0.00587 )	( 1392	GS16	12MY1967	0.01233 )	( 1394	GS18	13MY1967	C.00344 )
( 1395	GS19	13MY1967	0.00117 )	( 1396	GS20	13MY1967	0.00592 )	( 1397	GS21	13MY1967	C.00065 )

  

( 1398	GS22	14MY1967	0.00304 )	( 1565	GS13	50C1967	0.07606 )	( 1567	GS15	50C1967	C.00159 )
( 1569	GS17	50C1967	0.00149 )	( 1570	GS18	50C1967	0.00992 )	( 1572	GS20	60C1967	C.01352 )
( 1573	GS21	60C1967	C.00672 )	( 1574	GS22	60C1967	C.02013 )	( 1575	GS28	60C1967	C.00516 )
( 1544	MU 1	20C1967	0.00477 )	( 1546	LU 1	20C1967	C.02001 )	( 1520	HO 1	18SE1967	C.26875 )
( 1521	SH 1	18SE1967	0.00577 )	( 1526	MO 1	20SE1967	0.01138 )	( 1527	TR 1	20SE1967	C.00629 )
( 1531	GH 1	25SE1967	0.01691 )	( 1545	WL 1	20C1967	0.04730 )	( 1552	SM 1	60C1967	C.02641 )
( 1550	MR 1	50C1967	1.98241 )	( 1553	SG 1	60C1967	0.03672 )	( 1428	MU 2	29MY1967	C.00603 )
( 1426	MS 2	29MY1967	0.02100 )	( 1351	MI 2	21AP1967	C.00310 )	( 1417	HO 2	22MY1967	0.04486 )
( 1350	BH 2	19AP1967	0.63435 )	( 1401	MC 2	6MY1967	0.01176 )	( 1352	KW 2	21AP1967	C.00859 )
( 1354	GH 2	25AP1967	0.00518 )	( 1404	MC 2	10MY1967	C.05081 )	( 1407	SM 2	14MY1967	C.02388 )
( 1406	GB 2	13MY1967	0.00270 )								

*Fragilaria brevistriata* var. *capitata* Hérib.

*Fragilaria brevistriata* var. *inflata* Héribaud, Foss. Diat. Auvergne, vol. 2, p. 92, pl. 12, fig. 18. 1903.

The valves of this entity are lanceolate with subcapitate to capitate apices. All other features are as in the nominate variety.

Grunow's prior figure of *F. brevistriata* var. *subcapitata* (in Van Heurck 1881) is apparently without standing because of his failure to either figure or describe the nominate variety until 1885 (for discussion see Patrick and Reimer 1966).

Coll: 827.

*Fragilaria brevistriata* var. *inflata* (Pant.) Hust.

*Fragilaria inflata* Pantocsek, Res. Wiss. Erforsh. Balatonsees, vol. 2, p. 79, pl. 9, figs. 219-221. 1902.

*Fragilaria brevistriata* var. *inflata* (Pant.) Hustedt in: Pascher, Süßw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 145, fig. 152. 1930.

The valves of this entity are elliptic-lanceolate with rostrate to subcapitate ends. Other features as in the nominate variety.

238	FRBREVVI	TCI	NO OF	STATIONS							
( 46764	EV	17JL1937	0.01612 )	( 46767	EV	27CC1937	0.00387 )	( 1260	F 3	6JL1964	C.00191 )
( 1532	A 3	18SE1967	0.00329 )	( 1396	GS20	13MY1967	0.00370 )	( 1398	GS22	14MY1967	C.00304 )
( 1565	GS13	50C1967	C.07095 )	( 1569	GS17	50C1967	C.00149 )	( 1571	GS19	60C1967	C.00117 )
( 1522	BH 1	18SE1967	0.00182 )	( 1526	MO 1	20SE1967	0.00569 )	( 1530	FR 1	24SE1967	C.01000 )
( 1549	MQ 1	40C1967	0.01370 )	( 1552	SM 1	60C1967	C.01321 )	( 1550	PR 1	50C1967	C.04956 )
( 1428	MU 2	29MY1967	0.00603 )	( 1426	MS 2	29MY1967	C.01050 )	( 1350	BH 2	19AP1967	C.01542 )
( 1404	MO 2	10MY1967	0.01270 )								

*Fragilaria capucina* Desm.

*Fragilaria capucina* Desmazieres, Plant. Crypt. Nord France, 1st. ed., Fasc. 10, no. 453. 1825.

Cells rectangular, in life united into closely appressed, band-shaped colonies by the valve faces. Specimens from Lake Michigan 15-80 $\mu$  long, 2-5 $\mu$  broad. Valves linear with bluntly rounded, usually more or less cuneate apices. Striae perpendicular to the midline of the valve throughout its length, 14-18 in 10 $\mu$ , without visible substructure. Pseudoraphe linear, narrow, at the center of the valve expanded into a transverse fascia sometimes extending to the margin of the valve. In specimens in which the fascia does not reach the margin of the valve it is irregularly bordered by indistinct striae.

In Lake Michigan this entity is common in collections from inshore areas, and occasional populations are found in collections from the open lake. Published reports indicate that it reaches its greatest abundance in mesotrophic to eutrophic lakes.

239. FRCAPUCI. LOT NO. OF STATIONS. 318

( 60973 )	CH	1876	0.23618 )	( 3540 )	CH	11MY1875	0.04659 )	( 3541 )	CH	1FE1881	0.01956 )
( 3507 )	CH	19FE1881	0.05660 )	( 46910 )	CH	GC1945	0.04806 )	( 46921 )	CH	23NO1945	0.04656 )
( 46908 )	CH	CE1945	0.65458 )	( 46917 )	CH	12JA1946	0.03022 )	( 46915 )	CH	20FE1946	0.26177 )
( 46914 )	CH	19AP1946	0.07688 )	( 46924 )	CH	10MY1946	0.55026 )	( 46923 )	CH	22NO1946	1.77689 )
( 46920 )	CH	20DE1946	0.86114 )	( 46905 )	CH	JA1947	4.30200 )	( 46909 )	CH	MR1947	0.09562 )
( 46912 )	CH	AP1947	2.74807 )	( 46916 )	CH	4MY1947	0.01221 )	( 46906 )	CH	MY1947	0.47454 )
( 46919 )	CH	5JN1947	0.02124 )	( 46907 )	CH	JL1947	1.02568 )	( 46913 )	CH	6AU1947	5.10407 )
( 46922 )	CH	21AU1947	1.48055 )	( 46758 )	EV	5JN1937	0.22110 )	( 46771 )	EV	11JN1937	0.13314 )
( 46743 )	EV	20JN1937	2.15809 )	( 46745 )	EV	3JL1937	7.60711 )	( 46770 )	EV	9JL1937	4.50859 )
( 46764 )	EV	17JL1937	10.60435 )	( 46757 )	EV	25JL1937	2.29166 )	( 46747 )	EV	1AU1937	3.46560 )
( 46763 )	EV	23AU1937	0.60877 )	( 46765 )	EV	30AU1937	0.01115 )	( 46769 )	EV	7SE1937	0.08684 )
( 46752 )	EV	15SE1937	0.82717 )	( 46760 )	EV	22SE1937	1.10296 )	( 46750 )	EV	24SE1937	1.45167 )
( 46744 )	EV	6OC1937	1.91182 )	( 46748 )	EV	13OC1937	0.49103 )	( 46767 )	EV	27OC1937	0.43325 )
( 46749 )	EV	12MR1938	0.40053 )	( 46768 )	EV	16MR1938	0.58798 )	( 46762 )	EV	18MR1938	0.02206 )
( 46751 )	EV	30MR1938	0.02233 )	( 46772 )	EV	18AP1938	0.03549 )	( 46756 )	EV	27AP1938	0.01343 )
( 46759 )	EV	19MY1938	0.01013 )	( 46761 )	EV	27MY1938	0.19078 )	( 46766 )	EV	14DE1938	2.94677 )
( 1223 )	B 3	18MY1964	0.00938 )	( 1224 )	E 4	18MY1964	0.00392 )	( 1225 )	C 6	15MY1964	0.14112 )
( 1226 )	C 7	16MY1964	0.45282 )	( 1227 )	C* 2	13MY1964	0.09102 )	( 1228 )	D 2	14MY1964	0.12262 )
( 1229 )	D 5	14MY1964	0.11630 )	( 1230 )	E 2	16MY1964	0.48896 )	( 1232 )	E 5	16MY1964	0.07826 )
( 1233 )	B 3	5JN1964	0.04048 )	( 1234 )	B 3	18JN1964	0.21649 )	( 1235 )	C 7	16JN1964	0.72302 )
( 1439 )	B 6	5JN1964	0.10589 )	( 1236 )	C* 1	8JN1964	0.49009 )	( 1237 )	C* 2	8JN1964	0.16499 )
( 1238 )	D 3	11JN1964	0.09000 )	( 1239 )	D 4	11JN1964	0.20308 )	( 1240 )	D 6	10JN1964	0.08130 )
( 1241 )	E 2	13JN1964	0.51749 )	( 1242 )	E 3	13JN1964	0.00599 )	( 1243 )	E 6	13JN1964	0.01517 )
( 1244 )	F 1	11JN1964	0.84427 )	( 1245 )	F 2	11JN1964	0.32501 )	( 1246 )	F 3	11JN1964	0.05379 )
( 1247 )	B 3	14JL1964	0.02561 )	( 1248 )	B 3	24JL1964	0.00788 )	( 1440 )	B 6	11JL1964	0.27269 )
( 1441 )	B 6	24JL1964	0.12996 )	( 1249 )	C 3	8JL1964	0.38023 )	( 1250 )	C 6	10JL1964	0.37410 )
( 1251 )	C 7	16JL1964	0.88076 )	( 1252 )	C* 1	16JL1964	0.35425 )	( 1253 )	C* 2	16JL1964	0.06673 )
( 1254 )	D 2	15JL1964	0.10151 )	( 1255 )	D 5	15JL1964	0.01797 )	( 1256 )	E 2	14JL1964	0.12823 )
( 1257 )	E 3	14JL1964	0.00957 )	( 1258 )	F 1	6JL1964	1.65184 )	( 1259 )	F 2	6JL1964	0.43381 )
( 1260 )	F 3	6JL1964	0.24830 )	( 1261 )	B 3	2AU1964	0.02747 )	( 1262 )	B 3	17AU1964	0.00840 )
( 1442 )	B 6	2AU1964	0.15353 )	( 1443 )	B 6	16AU1964	0.01581 )	( 1263 )	C 7	15AU1964	0.00801 )
( 1264 )	C* 1	10AU1964	0.09654 )	( 1265 )	C* 2	10AU1964	0.06483 )	( 1266 )	D 3	18AU1964	0.01052 )
( 1267 )	D 6	18AU1964	0.03891 )	( 1268 )	E 2	15AU1964	0.03556 )	( 1269 )	E 3	15AU1964	0.00822 )
( 1270 )	F 1	10AU1964	0.08713 )	( 1444 )	B 6	19SE1964	0.00303 )	( 1271 )	C 7	22SE1964	0.61370 )
( 1272 )	C* 1	10SE1964	0.30374 )	( 1273 )	C* 2	10SE1964	0.01075 )	( 1274 )	D 1	17SE1964	0.03284 )
( 1275 )	D 2	17SE1964	0.07096 )	( 1276 )	D 3	18SE1964	0.04470 )	( 1277 )	D 4	18SE1964	0.03718 )
( 1278 )	D 6	18SE1964	0.10377 )	( 1279 )	E 1	16SE1964	0.10995 )	( 1280 )	E 2	16SE1964	0.00681 )
( 1281 )	E 3	16SE1964	0.00785 )	( 1282 )	E 4	16SE1964	0.02216 )	( 1283 )	E 5	16SE1964	0.07969 )
( 1284 )	E 6	17SE1964	3.78102 )	( 1285 )	F 1	15SE1964	0.04659 )	( 1286 )	F 2	15SE1964	0.04378 )
( 1287 )	F 3	15SE1964	0.01501 )	( 1288 )	B 3	15OC1964	1.14284 )	( 1445 )	B 6	14OC1964	0.05871 )
( 1289 )	C 7	14OC1964	0.13632 )	( 1290 )	C* 1	16OC1964	2.91832 )	( 1291 )	C* 2	16OC1964	1.02735 )
( 1292 )	D 1	15OC1964	0.52177 )	( 1293 )	D 2	15OC1964	0.01415 )	( 1294 )	D 3	15OC1964	0.11867 )
( 1295 )	D 4	15OC1964	0.24379 )	( 1296 )	D 5	14OC1964	0.03147 )	( 1297 )	D 6	14OC1964	0.03998 )
( 1298 )	E 1	12OC1964	0.32044 )	( 1299 )	E 2	12OC1964	0.43984 )	( 1300 )	E 3	13OC1964	0.12529 )
( 1301 )	E 4	13OC1964	0.02208 )	( 1302 )	E 5	13OC1964	1.41712 )	( 1303 )	E 6	13OC1964	1.95903 )
( 1304 )	F 1	11OC1964	0.01235 )	( 1305 )	F 2	11OC1964	0.02588 )	( 1306 )	F 3	11OC1964	0.01109 )
( 1307 )	B 6	NO1964	0.06494 )	( 1308 )	C 7	6NO1964	0.11558 )	( 1309 )	C* 1	10NO1964	0.28129 )
( 1310 )	C* 2	10NO1964	0.20635 )	( 1311 )	D 1	8NO1964	0.22703 )	( 1312 )	D 2	8NO1964	0.43458 )
( 1313 )	D 3	9NO1964	0.02703 )	( 1314 )	D 4	9NO1964	0.03732 )	( 1315 )	D 5	9NO1964	0.02730 )
( 1316 )	D 6	9NO1964	0.24176 )	( 1317 )	E 1	6NO1964	0.04021 )	( 1318 )	E 2	7NO1964	0.03995 )
( 1319 )	E 3	7NO1964	0.02356 )	( 1320 )	E 4	7NO1964	0.05171 )	( 1321 )	E 5	7NO1964	0.04691 )
( 1322 )	E 6	7NO1964	0.46656 )	( 1323 )	F 1	6NO1964	0.01254 )	( 1324 )	F 2	6NO1964	0.03028 )
( 1325 )	F 3	6NO1964	0.07053 )	( 1326 )	C 3	27JA1967	0.00578 )	( 1327 )	C 3	2MR1967	0.41153 )
( 1338 )	C 3	28MR1967	0.07405 )	( 1339 )	C 5	28MR1967	0.00624 )	( 1340 )	C 7	28MR1967	0.20361 )
( 1341 )	A 3	19AP1967	0.05424 )	( 1342 )	A 4	19AP1967	0.00361 )	( 1343 )	A 6	19AP1967	0.15840 )
( 1344 )	C 3	25AP1967	0.02316 )	( 1345 )	C 5	25AP1967	0.00390 )	( 1346 )	C 7	21AP1967	0.11750 )
( 1347 )	E 2	23AP1967	0.00976 )	( 1348 )	E 5	23AP1967	0.04249 )	( 1368 )	A 3	4MY1967	0.06598 )
( 1369 )	A 4	4MY1967	0.00745 )	( 1370 )	A 6	3MY1967	0.64449 )	( 1371 )	C 3	4MY1967	0.02539 )
( 1373 )	C 7	5MY1967	0.00570 )	( 1374 )	E 2	7MY1967	0.02092 )	( 1375 )	E 3	7MY1967	0.00241 )
( 1376 )	E 5	6MY1967	0.10962 )	( 1408 )	A 3	23MY1967	0.08049 )	( 1409 )	A 4	23MY1967	0.00298 )
( 1410 )	A 6	24MY1967	0.19734 )	( 1411 )	C 3	31MY1967	0.03282 )	( 1412 )	C 5	31MY1967	0.00842 )
( 1413 )	C 7	25MY1967	0.01895 )	( 1414 )	E 2	28MY1967	0.00336 )	( 1415 )	E 3	28MY1967	0.00450 )
( 1416 )	E 5	28MY1967	0.03718 )	( 1431 )	A 3	12JN1967	0.12359 )	( 1432 )	A 4	13JN1967	0.01533 )
( 1433 )	C 3	17JN1967	0.11626 )	( 1434 )	C 5	17JN1967	0.00598 )	( 1435 )	C 7	13JN1967	0.31513 )
( 1436 )	E 2	15JN1967	0.00724 )	( 1437 )	E 3	15JN1967	0.00538 )	( 1438 )	E 5	14JN1967	0.14887 )
( 1446 )	A 3	11JL1967	0.31065 )	( 1447 )	A 4	11JL1967	0.65494 )	( 1448 )	A 6	10JL1967	4.85234 )
( 1449 )	C 3	16JL1967	0.15667 )	( 1450 )	C 5	16JL1967	0.00190 )	( 1451 )	C 7	16JL1967	14.74351 )
( 1452 )	E 2	14JL1967	4.47056 )	( 1453 )	E 3	15JL1967	0.01264 )	( 1454 )	E 5	15JL1967	2.80056 )
( 1504 )	A 3	28AU1967	0.12344 )	( 1506 )	A 6	29AU1967	2.74625 )	( 1509 )	C 5	25E1967	0.01514 )

( 1510	C 7	29AU1967	0.11065 )	( 1511	E 2	1SE1967	0.53719 )	( 1512	E 3	1SE1967	0.24737 )
( 1513	E 5	31AU1967	1.18577 )	( 1532	A 3	18SE1967	4.13915 )	( 1533	A 4	19SE1967	1.20230 )
( 1534	A 6	19SE1967	4.77771 )	( 1535	C 7	20SE1967	2.59117 )	( 1536	E 2	24SE1967	0.35175 )
( 1537	E 3	24SE1967	0.06038 )	( 1538	E 5	23SE1967	0.17124 )	( 1539	C 3	40C1967	1.72587 )
( 1540	C 5	40C1967	0.66015 )	( 1541	E 2	110C1967	2.60763 )	( 1542	E 3	110C1967	0.06611 )
( 1543	E 5	100C1967	0.35914 )	( 1377	GS 1	9MY1967	0.05541 )	( 1378	GS 2	9MY1967	0.18082 )
( 1379	GS 3	9MY1967	2.38301 )	( 1380	GS 4	9MY1967	0.58853 )	( 1381	GS 5	10MY1967	0.61060 )
( 1382	GS 6	10MY1967	0.38858 )	( 1383	GS 7	10MY1967	3.18114 )	( 1384	GS 8	10MY1967	0.64701 )
( 1385	GS 9	10MY1967	1.64818 )	( 1386	GS 10	12MY1967	1.00546 )	( 1387	GS 11	12MY1967	10.81274 )
( 1388	GS 12	12MY1967	15.62594 )	( 1389	GS 13	12MY1967	53.24496 )	( 1390	GS 14	12MY1967	43.15512 )
( 1391	GS 15	12MY1967	25.47527 )	( 1392	GS 16	12MY1967	33.22340 )	( 1393	GS 17	13MY1967	28.76396 )
( 1394	GS 18	13MY1967	49.60951 )	( 1395	GS 19	13MY1967	38.47147 )	( 1396	GS 20	13MY1967	41.07135 )
( 1397	GS 21	13MY1967	30.90396 )	( 1398	GS 22	14MY1967	6.80086 )	( 1554	GS 1	30C1967	0.26329 )
( 1555	GS 2	30C1967	0.10946 )	( 1556	GS 3	30C1967	0.49017 )	( 1557	GS 4	30C1967	0.06353 )
( 1558	GS 5	40C1967	0.25369 )	( 1559	GS 7	40C1967	0.04896 )	( 1560	GS 8	40C1967	0.02834 )
( 1561	GS 9	40C1967	0.02935 )	( 1562	GS 10	50C1967	0.03454 )	( 1563	GS 11	50C1967	0.06313 )
( 1564	GS 12	50C1967	0.32919 )	( 1565	GS 13	50C1967	0.18254 )	( 1566	GS 14	50C1967	0.70629 )
( 1567	GS 15	50C1967	1.11139 )	( 1568	GS 16	50C1967	1.41412 )	( 1569	GS 17	50C1967	0.86754 )
( 1570	GS 18	50C1967	9.71837 )	( 1571	GS 19	60C1967	44.00943 )	( 1572	GS 20	60C1967	55.83495 )
( 1573	GS 21	60C1967	18.50089 )	( 1574	GS 22	60C1967	0.04890 )	( 1575	GS 28	60C1967	26.66718 )
( 1544	MU 1	20C1967	0.38125 )	( 1547	MS 1	20C1967	0.74251 )	( 1524	MI 1	20SE1967	28.02101 )
( 1546	LU 1	20C1967	0.88031 )	( 1520	HQ 1	18SE1967	0.43849 )	( 1521	SH 1	18SE1967	0.92315 )
( 1522	BH 1	18SE1967	0.01276 )	( 1523	RA 1	19SE1967	23.46863 )	( 1525	PW 1	20SE1967	5.79306 )
( 1526	MO 1	20SE1967	3.73215 )	( 1527	TR 1	20SE1967	1.30818 )	( 1528	SP 1	20SE1967	3.23419 )
( 1529	KW 1	20SE1967	1.30711 )	( 1530	FR 1	24SE1967	0.35003 )	( 1531	GH 1	25SE1967	0.21133 )
( 1545	WL 1	20C1967	2.05419 )	( 1548	CA 1	30C1967	0.44524 )	( 1549	PQ 1	40C1967	0.65780 )
( 1551	ES 1	50C1967	8.17957 )	( 1552	SM 1	60C1967	7.28953 )	( 1550	MR 1	50C1967	5.55074 )
( 1553	SG 1	60C1967	8.92067 )	( 1428	MU 2	29MY1967	1.97656 )	( 1426	MS 2	29MY1967	5.71129 )
( 1351	MI 2	21AP1967	0.89372 )	( 1427	LU 2	29MY1967	1.42857 )	( 1417	HO 2	22MY1967	8.13519 )
( 1418	SH 2	22MY1967	27.37169 )	( 1350	BH 2	19AP1967	1.12773 )	( 1425	RA 2	29MY1967	13.43825 )
( 1399	PW 2	5MY1967	5.22307 )	( 1401	MC 2	6MY1967	3.76293 )	( 1402	TR 2	6MY1967	5.80463 )
( 1400	SB 2	6MY1967	3.43102 )	( 1352	KW 2	21AP1967	7.69627 )	( 1353	FR 2	23AP1967	1.85654 )
( 1354	GH 2	25AP1967	2.37508 )	( 1429	WL 2	29MY1967	8.49347 )	( 1403	CA 2	10MY1967	2.51079 )
( 1404	MO 2	10MY1967	13.82114 )	( 1405	ES 2	12MY1967	65.63467 )	( 1407	SM 2	14MY1967	31.81465 )
( 1349	CI 2	19AP1967	1.14951 )	( 1406	GB 2	13MY1967	5.47783 )	( 1419	BU 2	23MY1967	5.56573 )
( 1420	IH 2	23MY1967	7.97583 )	( 1421	CH 2	23MY1967	5.55170 )	( 1422	GA 2	23MY1967	5.23721 )
( 1423	WA 2	25MY1967	25.89816 )	( 1424	KN 2	25MY1967	13.85558 )	( 1430	MC 2	12JN1967	1.55440 )

*Fragilaria capucina* var. *lanceolata* Grun.

*Fragilaria capucina* var. *lanceolata* Grunow in: Van Heurck, Syn. Diat.  
Belgique, pl. 45, fig. 5. 1881.

Valves elongate, lanceolate, evenly narrowed from near the center to the ends. Ends usually slightly capitate. Other features the same as in the nominate variety.

Although this entity has essentially the same distribution as the nominate variety in Lake Michigan, it is usually more abundant in offshore collections. As is true of many taxa in the genus, the shape of the valve is quite variable.

240 FRCAPUVL TOT NO OF STATIONS 142

(46910	CH	0C1945	0.00328 )	(46921	CH	23NO1945	0.01681 )	(46917	CH	12JA1946	0.02246 )
(46915	CH	20FE1946	0.18210 )	(46914	CH	19AP1946	0.08649 )	(46924	CH	10MY1946	0.41269 )
(46923	CH	22NO1946	2.20090 )	(46920	CH	20DE1946	0.68090 )	(46905	CH	JA1947	0.02451 )
(46909	CH	MR1947	0.02732 )	(46912	CH	AP1947	0.05749 )	(46916	CH	4MY1947	0.05497 )
(46906	CH	MY1947	0.03916 )	(46919	CH	5JN1947	0.00607 )	(46907	CH	JL1947	0.35258 )
(46913	CH	6AU1947	0.09413 )	(46922	CH	21AU1947	0.34652 )	(46758	EV	5JN1937	0.01426 )
(46771	EV	11JN1937	0.12125 )	(46743	EV	20JN1937	0.26548 )	(46770	EV	9JL1937	0.31011 )
(46764	EV	17JL1937	0.03223 )	(46757	EV	25JL1937	0.02407 )	(46747	EV	1AU1937	0.15348 )
(46765	EV	30AU1937	0.34579 )	(46769	EV	7SE1937	0.02171 )	(46752	EV	15SE1937	0.02177 )
(46760	EV	22SE1937	1.15159 )	(46750	EV	24SE1937	0.07541 )	(46744	EV	60C1937	0.66279 )
(46767	EV	27OC1937	1.40807 )	(46749	EV	12MR1938	0.80107 )	(46768	EV	16MR1938	0.04410 )
(46762	EV	18MR1938	0.26467 )	(46751	EV	30MR1938	0.03350 )	(46772	EV	18AP1938	0.12775 )
(46756	EV	27AP1938	0.02183 )	(46759	EV	19MY1938	0.08778 )	(46761	EV	27MY1938	0.71405 )
(46766	EV	14DE1938	1.15653 )	( 1234	B 3	18JN1964	0.00843 )	( 1439	B 6	5JN1964	0.00599 )
( 1237	C* 2	8JN1964	0.01289 )	( 1238	C 3	11JN1964	0.00400 )	( 1239	D 4	11JN1964	0.00232 )
( 1241	E 2	13JN1964	0.00296 )	( 1243	E 6	13JN1964	0.01670 )	( 1244	F 1	11JN1964	0.00548 )
( 1245	F 2	11JN1964	0.00692 )	( 1247	B 3	14JL1964	0.01281 )	( 1248	B 3	24JL1964	0.01182 )
( 1440	B 6	11JL1964	0.05528 )	( 1441	B 6	24JL1964	0.00441 )	( 1249	C 3	8JL1964	0.00543 )
( 1250	C 6	10JL1964	0.00822 )	( 1251	C 7	16JL1964	0.04925 )	( 1252	C* 1	16JL1964	0.09484 )
( 1253	C* 2	16JL1964	0.00913 )	( 1254	D 2	15JL1964	0.01532 )	( 1255	D 5	15JL1964	0.00513 )
( 1256	E 2	14JL1964	0.00550 )	( 1258	F 1	6JL1964	0.00708 )	( 1259	F 2	6JL1964	0.00620 )
( 1261	B 3	2AU1964	0.00196 )	( 1442	B 6	2AU1964	0.02047 )	( 1443	B 6	16AU1964	0.00198 )
( 1264	C* 1	10AU1964	0.08109 )	( 1265	C* 2	10AU1964	0.00894 )	( 1266	D 3	18AU1964	0.00351 )
( 1267	D 6	18AU1964	0.00865 )	( 1268	E 2	15AU1964	0.00547 )	( 1270	F 1	10AU1964	0.00272 )
( 1271	C 7	22SE1964	0.01306 )	( 1272	C* 1	10SE1964	0.00410 )	( 1282	E 4	16SE1964	0.01108 )
( 1283	E 5	16SE1964	0.01226 )	( 1288	B 3	15OC1964	0.01306 )	( 1445	B 6	14OC1964	0.04566 )
( 1289	C 7	14OC1964	0.02199 )	( 1290	C* 1	16OC1964	0.00379 )	( 1291	C* 2	16OC1964	0.00734 )
( 1292	D 1	15OC1964	0.00373 )	( 1293	D 2	15OC1964	0.01415 )	( 1294	D 3	15OC1964	0.00659 )
( 1296	D 5	14OC1964	0.01180 )	( 1298	E 1	12CC1964	0.00269 )	( 1299	E 2	12OC1964	0.01885 )
( 1300	E 3	13OC1964	0.01432 )	( 1301	E 4	13OC1964	0.00883 )	( 1302	E 5	13OC1964	0.00810 )

( 1303	E 6	130C1964	0.02239 )	( 1305	F 2	110C1964	0.00173 )	( 1308	C 7	6N01964	C.02433 )
( 1310	C* 2	10N01964	0.00227 )	( 1312	D 2	8N01964	0.00621 )	( 1316	D 6	9N01964	C.00756 )
( 1317	E 1	6N01964	0.00766 )	( 1318	E 2	7N01964	C.00380 )	( 1320	E 4	7N01964	C.00620 )
( 1321	E 5	7N01964	C.00638 )	( 1322	E 6	7N01964	0.02999 )	( 1323	F 1	6N01964	C.00557 )
( 1324	F 2	6N01964	0.00695 )	( 1337	C 3	2MR1967	0.00294 )	( 1339	C 5	28MR1967	0.00312 )
( 1340	C 7	28MR1967	0.00073 )	( 1343	A 6	19AP1967	0.00208 )	( 1375	E 3	7MY1967	C.00241 )
( 1414	E 2	28MY1967	0.00336 )	( 1448	A 6	10JL1967	0.01061 )	( 1454	E 5	15JL1967	C.00800 )
( 1512	E 3	15E1967	0.00393 )	( 1532	A 3	18SE1967	0.00329 )	( 1533	A 4	19SE1967	C.00928 )
( 1535	C 7	20SE1967	0.00322 )	( 1536	E 2	24SE1967	0.00818 )	( 1541	E 2	110C1967	C.00532 )
( 1542	E 3	110C1967	0.01017 )	( 1380	GS 4	9MY1967	C.00504 )	( 1554	GS 1	30C1967	C.01067 )
( 1563	GS11	50C1967	0.00234 )	( 1569	GS17	50C1967	0.00149 )	( 1571	GS19	60C1967	0.00410 )
( 1572	GS20	60C1967	0.00270 )	( 1573	GS21	6CC1967	0.00112 )	( 1547	MS 1	20C1967	C.02992 )
( 1522	BH 1	18SE1967	0.00182 )	( 1526	MO 1	20SE1967	0.01138 )	( 1529	KW 1	20SE1967	0.01199 )
( 1548	CA 1	30C1967	0.05088 )	( 1552	SM 1	6CC1967	0.03962 )	( 1553	SG 1	60C1967	C.00734 )
( 1428	MU 2	29MY1967	0.02109 )	( 1417	HO 2	22MY1967	0.01122 )	( 1418	SH 2	22MY1967	C.07776 )
( 1350	BH 2	19AP1967	0.11674 )	( 1352	KW 2	21AP1967	0.24910 )	( 1354	GH 2	25AP1967	C.00345 )
( 1429	WL 2	29MY1967	0.19110 )	( 1407	SM 2	14MY1967	0.04180 )	( 1349	CI 2	19AP1967	C.00359 )
( 1406	GB 2	13MY1967	0.02696 )								

*Fragilaria capucina* var. *mesolepta* Rabh.

*Fragilaria capucina* var. *mesolepta* Rabenhorst, Fl. Europaea Alg., Sect. 1, p. 118. 1864.

Valves constricted at the central area, either linear or slightly expanded between the central area and the ends. The central area is usually a hyaline fascia. Ends of the valves rostrate to subcapitate. Size range and ornamentation of the valve the same as in the nominate variety.

The distribution and abundance of this entity in Lake Michigan is essentially the same as for the nominate variety.

241 FRCAPUVM ICT NO OF STATIONS 176

( 3540	CH	11MY1879	0.02796 )	( 3507	CH	19FE1881	0.04528 )	( 46910	CH	0C1945	C.00218 )
( 46921	CH	23N01945	0.00453 )	( 46508	CH	DE1945	C.01007 )	( 46917	CH	12JA1946	C.00083 )
( 46914	CH	19AP1946	0.00214 )	( 46524	CH	10MY1946	0.00282 )	( 46923	CH	22NO1946	C.00437 )
( 46920	CH	20DE1946	0.00092 )	( 46509	CH	MR1947	0.02277 )	( 46912	CH	AP1947	C.03449 )
( 46916	CH	4MY1947	0.00204 )	( 46506	CH	MY1947	C.00066 )	( 46919	CH	5JN1947	0.00759 )
( 46907	CH	JL1947	0.00444 )	( 46513	CH	6AU1947	C.01046 )	( 46922	CH	21AU1947	C.00097 )
( 46758	EV	5JN1937	0.07489 )	( 46771	EV	11JN1937	C.00238 )	( 46743	EV	20JN1937	C.26548 )
( 46745	EV	3JL1937	0.06270 )	( 46770	EV	9JL1937	C.31011 )	( 46764	EV	17JL1937	1.49879 )
( 46757	EV	25JL1937	0.24553 )	( 46747	EV	1AU1937	C.69312 )	( 46760	EV	22SE1937	C.00585 )
( 46748	EV	130C1937	0.10675 )	( 46749	EV	12MR1938	0.02427 )	( 46768	EV	16MR1938	C.01470 )
( 46756	EV	27AP1938	0.00672 )	( 46759	EV	19MY1938	C.00338 )	( 1224	B 4	18MY1964	C.00196 )
( 1226	C 7	16MY1964	0.01142 )	( 1227	C* 2	13MY1964	0.00439 )	( 1228	D 2	14MY1964	C.00584 )
( 1230	E 2	16MY1964	0.01185 )	( 1232	E 5	16MY1964	0.00348 )	( 1233	B 3	5JN2964	C.00238 )
( 1234	B 3	18JN1964	0.00562 )	( 1439	B 6	5JN1964	0.00599 )	( 1236	C* 1	8JN1964	C.12952 )
( 1237	C* 2	8JN1964	0.00516 )	( 1239	D 4	11JN1964	0.00232 )	( 1241	E 2	13JN1964	C.00296 )
( 1243	E 6	13JN1964	0.01253 )	( 1244	F 1	11JN1964	C.00877 )	( 1245	F 2	11JN1964	C.01037 )
( 1246	F 3	11JN1964	0.00598 )	( 1441	B 6	24JL1964	0.00220 )	( 1249	C 3	8JL1964	0.03802 )
( 1252	C* 1	16JL1964	C.00279 )	( 1253	C* 2	16JL1964	0.00228 )	( 1254	D 2	15JL1964	C.00192 )
( 1258	F 1	6JL1964	0.03540 )	( 1259	F 2	6JL1964	0.01239 )	( 1260	F 3	6JL1964	0.01719 )
( 1262	B 3	17AU1964	0.00210 )	( 1264	C* 1	10AU1964	0.00579 )	( 1265	C* 2	10AU1964	C.00224 )
( 1268	E 2	15AU1964	0.00274 )	( 1270	F 1	10AU1964	0.00272 )	( 1279	E 1	16SE1964	0.00785 )
( 1283	E 5	16SE1964	0.00613 )	( 1284	E 6	17SE1964	C.00635 )	( 1288	B 3	150C1964	C.03701 )
( 1289	C 7	140C1964	0.00440 )	( 1290	C* 1	160C1964	0.03411 )	( 1291	C* 2	160C1964	0.22993 )
( 1292	D 1	150C1964	0.02609 )	( 1294	D 3	150C1964	0.00659 )	( 1298	E 1	120C1964	0.02154 )
( 1299	E 2	120C1964	0.09739 )	( 1300	E 3	130C1964	C.02148 )	( 1301	E 4	130C1964	C.01325 )
( 1302	E 5	130C1964	0.02429 )	( 1303	E 6	130C1964	0.03918 )	( 1304	F 1	110C1964	C.00247 )
( 1305	F 2	110C1964	0.00863 )	( 1306	F 3	110C1964	0.00277 )	( 1307	B 6	N01564	C.01082 )
( 1308	C 7	6N01964	0.00912 )	( 1309	C* 1	10N01964	0.01286 )	( 1310	C* 2	10N01964	C.01134 )
( 1311	D 1	8N01964	0.02064 )	( 1312	D 2	8N01964	0.01862 )	( 1313	D 3	9N01964	C.00386 )
( 1316	D 6	9N01964	0.00756 )	( 1318	E 2	7N01964	0.00380 )	( 1320	E 4	7N01964	C.00414 )
( 1321	E 5	7N01964	0.01915 )	( 1322	E 6	7N01964	0.01666 )	( 1324	F 2	6N01964	C.00466 )
( 1337	C 3	2MR1967	0.00147 )	( 1338	C 3	28MR1967	0.00397 )	( 1341	A 3	19AP1967	C.00217 )
( 1343	A 6	19AP1967	C.00069 )	( 1370	A 6	3MY1967	C.00230 )	( 1375	E 3	7MY1967	C.00241 )
( 1376	E 5	6MY1967	0.00562 )	( 1410	A 6	24MY1967	0.00564 )	( 1416	E 5	28MY1967	C.00219 )
( 1435	C 7	13JN1967	0.00316 )	( 1447	A 4	11JL1967	C.00234 )	( 1448	A 6	10JL1967	C.02122 )
( 1449	C 3	16JL1967	0.01146 )	( 1451	C 7	16JL1967	0.03543 )	( 1452	E 2	14JL1967	C.01277 )
( 1454	E 5	15JL1967	0.01400 )	( 1511	E 2	15E1967	C.00614 )	( 1532	A 3	18SE1967	C.00657 )
( 1533	A 4	19SE1967	0.00928 )	( 1534	A 6	19SE1967	0.01861 )	( 1535	C 7	20SE1967	C.00644 )
( 1536	E 2	24SE1967	0.01091 )	( 1538	E 5	23SE1967	C.00552 )	( 1541	E 2	110C1967	C.02661 )
( 1378	GS 2	9MY1967	0.00841 )	( 1379	GS 3	9MY1967	0.05261 )	( 1380	GS 4	9MY1967	C.00841 )
( 1381	GS 5	10MY1967	0.00477 )	( 1382	GS 6	10MY1967	0.00555 )	( 1383	GS 7	10MY1967	C.01069 )
( 1384	GS 8	10MY1967	0.00185 )	( 1385	GS 9	10MY1967	0.00471 )	( 1386	GS10	12MY1967	C.01149 )
( 1387	GS11	12MY1967	0.01584 )	( 1388	GS12	12MY1967	0.04223 )	( 1389	GS13	12MY1967	0.32746 )
( 1390	GS14	12MY1967	0.20552 )	( 1391	GS15	12MY1967	0.06704 )	( 1392	GS16	12MY1967	C.02157 )
( 1393	GS17	13MY1967	0.17532 )	( 1394	GS18	13MY1967	0.12041 )	( 1395	GS19	13MY1967	C.25836 )
( 1396	GS20	13MY1967	0.12652 )	( 1397	GS21	13MY1967	0.04578 )	( 1398	GS22	14MY1967	C.02125 )
( 1556	GS 3	30C1967	0.00521 )	( 1564	GS12	50C1967	0.00329 )	( 1567	GS15	50C1967	C.00318 )
( 1568	GS16	50C1967	0.00577 )	( 1569	GS17	50C1967	C.00743 )	( 1570	GS18	50C1967	C.02975 )

( 1571 )	GS19	60C1967	0.20489 )	( 1572 )	GS20	60C1967	1.13563 )	( 1573 )	GS21	60C1967	C.10527 )
( 1574 )	GS22	60C1967	0.00575 )	( 1575 )	GS28	60C1967	0.12128 )	( 1544 )	MU 1	20C1967	C.02621 )
( 1547 )	MS 1	20C1967	0.01597 )	( 1524 )	MI 1	20SE1967	C.02189 )	( 1546 )	LU 1	20C1967	C.03501 )
( 1526 )	MO 1	20SE1967	0.01707 )	( 1530 )	FR 1	24SE1967	0.04000 )	( 1531 )	GH 1	25SE1967	C.02536 )
( 1545 )	WL 1	20C1967	0.04730 )	( 1548 )	CA 1	30C1967	0.01272 )	( 1549 )	PQ 1	40C1967	C.21927 )
( 1551 )	ES 1	50C1967	0.03195 )	( 1550 )	MR 1	50C1967	0.09912 )	( 1553 )	SG 1	60C1967	C.02203 )
( 1428 )	MU 2	29MY1967	0.22297 )	( 1426 )	MS 2	29MY1967	0.16798 )	( 1427 )	LU 2	29MY1967	C.06053 )
( 1417 )	HO 2	22MY1967	0.07851 )	( 1418 )	SH 2	22MY1967	0.17107 )	( 1350 )	BH 2	19AP1967	C.08590 )
( 1401 )	MO 2	6MY1967	0.01176 )	( 1353 )	FR 2	23AP1967	0.02110 )	( 1354 )	GH 2	25AP1967	C.05523 )
( 1429 )	WL 2	29MY1967	0.55208 )	( 1404 )	MC 2	10MY1967	0.07622 )	( 1405 )	ES 2	12MY1967	C.13545 )
( 1406 )	GB 2	13MY1967	0.11592 )	( 1423 )	WA 2	25MY1967	0.00428 )	(			

*Fragilaria construens* (Ehr.) Grun.

*Staurosira construens* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:424. 1843.

*Fragilaria construens* (Ehr.) Grunow, Verh. Zool. Bot. Ges. Wien, 12:371. 1862.

Cells in girdle view rectangular, joined by the valve faces into long, closely appressed, band-shaped colonies. Specimens from Lake Michigan 5-25 $\mu$  long, 4-12 $\mu$  broad. Valves short, lanceolate with strongly inflated central portion and protracted, subcapitate to capitate ends. In girdle view of the colony the sharp expansion of the valve appears as a line, or a double line, depending on the level of focus, running the length of the colony. Striae slightly radiate throughout the length of the valve, in the more robust specimens finely lineate, 14-18 in 10 $\mu$ . Pseudoraphe variable in shape, in some specimens very narrowly lanceolate and sharply bordered. in others more broadly lanceolate and indistinctly bordered. No specially differentiated central area is present.

Specimens of this taxon from Lake Michigan are highly variable, both in the shape of the valve and in the structure of the striae. Many populations approach closely the form of the smaller size range of *F. inflata* (Heid.) Hust. but specimens of larger size, clearly referable to that taxon, have never been found in our collections. Further research may show that the specimens treated under this epithet actually represent a complex of similar forms, but such distinctions cannot be made in our material. Large populations are rare in Lake Michigan and the forms present grade into one another so subtly that no distinctions can be made. Published reports indicate that this entity reaches its greatest abundance in eutrophic lakes. Most of our reports come from inshore areas that are appreciably eutrophied.

#### 242 FRCONSTR TCI NE GE STATIONS 48

( 60973 )	CH	1876	0.04724 )	( 3541 )	CH	1FE1881	C.00978 )	( 46923 )	CH	22NO1946	C.00219 )
( 46920 )	CH	20DE1946	0.00185 )	( 46522 )	CH	21AU1947	0.00194 )	( 46758 )	EV	5JN1937	C.00357 )
( 46763 )	EV	23AU1937	0.02029 )	( 46756 )	EV	27AP1938	0.00168 )	( 1236 )	C* 1	8JN1964	C.00175 )
( 1243 )	E 6	13JN1964	0.00209 )	( 1264 )	C* 1	10AU1964	0.00193 )	( 1272 )	C* 1	10SE1964	C.00821 )
( 1279 )	E 1	16SE1964	0.00785 )	( 1287 )	F 3	15SE1964	0.00500 )	( 1293 )	D 2	15OC1964	0.00472 )
( 1341 )	A 3	19AP1967	0.00325 )	( 1408 )	A 3	23MY1967	0.00447 )	( 1536 )	E 2	24SE1967	C.00273 )
( 1388 )	GS12	12MY1967	0.00603 )	( 1356 )	GS20	13MY1967	C.01036 )	( 1397 )	CS21	13MY1967	C.00065 )
( 1555 )	GS 2	30C1967	0.00706 )	( 1569 )	GS17	50C1967	0.00149 )	( 1571 )	GS19	60C1967	C.00117 )
( 1572 )	GS20	60C1967	0.01532 )	( 1573 )	GS21	60C1967	0.00336 )	( 1574 )	CS22	60C1967	C.01726 )
( 1575 )	GS28	60C1967	0.00387 )	( 1544 )	MU 1	20C1967	0.00715 )	( 1546 )	LU 1	20C1967	C.03001 )
( 1521 )	SH 1	18SE1967	0.00577 )	( 1522 )	BH 1	18SE1967	0.00547 )	( 1527 )	TR 1	20SE1967	C.03145 )
( 1529 )	KW 1	20SE1967	0.02398 )	( 1530 )	FR 1	24SE1967	C.01000 )	( 1545 )	WL 1	20C1967	C.10812 )
( 1552 )	SM 1	60C1967	0.02641 )	( 1550 )	MR 1	50C1967	1.58592 )	( 1553 )	SG 1	60C1967	C.00734 )
( 1428 )	MU 2	29MY1967	0.00301 )	( 1426 )	MS 2	29MY1967	0.05249 )	( 1417 )	HO 2	22MY1967	C.01122 )
( 1350 )	BH 2	19AP1967	0.16519 )	( 1402 )	TR 2	6MY1967	0.00541 )	( 1354 )	GH 2	25AP1967	C.00690 )
( 1404 )	MO 2	10MY1967	0.02541 )	( 1407 )	SM 2	14MY1967	C.02986 )	( 1349 )	CI 2	19AP1967	C.00359 )

*Fragilaria construens* var. *binodis* (Ehr.) Grun.

*Fragilaria ? binodis* Ehrenberg, Mikrogeol., pl. 5(2), fig. 26; pl. 6(1), fig. 43; pl. 11, fig. 15. 1854.

*Fragilaria construens* var. *binodis* (Ehr.) Grunow, Verh. Zool.-Bot. Ges. Wien, 12:371. 1862.

Valves biundulate with constricted midportions and protracted, rostrate to subcapitate ends. Size range and ornamentation of the valve surface the same as in the nominate variety. Valves often more or less asymmetric, strongly constricted on one side and somewhat less constricted to nearly parallel on the other.

Published reports indicate that this entity has about the same distribution range as the nominate variety. Asymmetric forms appear to be most common in highly eutrophied habitats.

243 FRCONS VB TOT NO OF STATIONS 65

( 3541	CH	1FE1881	0.01956 )	( 46747	EV	1AU1937	0.00248 )	( 1245	F 2	11JUN1964	C.00346 )
( 1264	C* 1	10AU1964	0.00772 )	( 1270	F 1	10AU1964	0.00272 )	( 1279	E 1	16SE1964	C.01178 )
( 1285	F 1	15SE1964	0.00582 )	( 1304	F 1	11OC1964	0.00247 )	( 1305	F 2	11OC1964	C.00345 )
( 1306	F 3	11OC1964	0.00554 )	( 1324	F 2	6NO1964	0.00233 )	( 1338	C 3	28MR1967	0.00132 )
( 1341	A 3	19AP1967	0.00542 )	( 1342	A 4	19AP1967	0.00361 )	( 1532	A 3	18SE1967	C.00657 )
( 1536	F 2	24SE1967	0.00818 )	( 1541	F 2	11OC1967	0.00532 )	( 1387	GS11	12MY1967	C.00396 )
( 1388	GS12	12MY1967	0.00603 )	( 1389	GS13	12MY1967	0.00258 )	( 1391	GS15	12MY1967	C.00479 )
( 1392	GS16	12MY1967	0.01541 )	( 1394	GS18	13MY1967	0.00344 )	( 1395	GS19	13MY1967	C.00117 )
( 1396	GS20	13MY1967	0.00592 )	( 1554	GS 1	30C1967	0.00356 )	( 1558	GS 5	40C1967	C.05946 )
( 1561	GS 9	40C1967	0.00587 )	( 1565	GS13	50C1967	0.03042 )	( 1566	GS14	50C1967	C.00183 )
( 1567	GS15	50C1967	0.01429 )	( 1568	GS16	50C1967	0.01299 )	( 1569	GS17	50C1967	C.01189 )
( 1571	GS19	60C1967	0.00234 )	( 1572	GS20	60C1967	0.03064 )	( 1574	GS22	60C1967	C.04315 )
( 1575	GS28	60C1967	0.02193 )	( 1544	MU 1	20C1967	0.06434 )	( 1546	LU 1	20C1967	C.03001 )
( 1520	HQ 1	18SE1967	0.09901 )	( 1521	SH 1	18SE1967	0.04616 )	( 1522	BH 1	18SE1967	C.00365 )
( 1526	MO 1	20SE1967	0.14792 )	( 1527	TR 1	20SE1967	6.13836 )	( 1528	SB 1	20SE1967	C.02888 )
( 1529	KW 1	20SE1967	0.17988 )	( 1530	FR 1	24SE1967	0.08001 )	( 1531	GH 1	25SE1967	C.05072 )
( 1545	WL 1	20C1967	20.43381 )	( 1549	MQ 1	40C1967	0.01370 )	( 1552	SM 1	60C1967	C.01321 )
( 1550	MR 1	50C1967	0.35931 )	( 1553	SG 1	60C1967	0.02203 )	( 1428	MU 2	29MY1967	0.00904 )
( 1426	MS 2	29MY1967	0.02100 )	( 1427	LU 2	29MY1967	0.02421 )	( 1417	HO 2	22MY1967	C.06729 )
( 1418	SH 2	22MY1967	0.07776 )	( 1350	BH 2	19AP1967	0.11674 )	( 1401	PD 2	6MY1967	0.01764 )
( 1353	FR 2	23AP1967	0.01055 )	( 1354	GH 2	25AP1967	0.01036 )	( 1404	MQ 2	10MY1967	C.02541 )
( 1407	SM 2	14MY1967	0.00597 )	( 1406	GB 2	13MY1967	0.00539 )	(			

*Fragilaria construens* var. *capitata* Hérib.

*Fragilaria construens* var. *capitata* Héribaud, Diat. Auvergne, p. 144, pl. 1, fig. 2. 1893.

Valves linear-lanceolate with protracted, capitate ends, occasionally slightly constricted near the middle of the valve. Specimens from Lake Michigan 12-30 $\mu$  long, 4-7 $\mu$  broad, striae 14-16 in 10 $\mu$ . Ornamentation of the valve surface the same as in the nominate variety.

244 FRCONS VB TOT NO OF STATIONS 12

( 3541	CH	1FE1881	0.01956 )	( 1274	D 1	17SE1964	0.00469 )	( 1279	E 1	16SE1964	C.02356 )
( 1382	GS 6	10MY1967	0.00278 )	( 1352	GS16	12MY1967	0.00925 )	( 1396	GS2C	13MY1967	C.00074 )
( 1554	GS 1	30C1967	0.00712 )	( 1559	GS 7	40C1967	0.00350 )	( 1571	GS19	60C1967	C.00059 )
( 1350	BH 2	19AP1967	0.00220 )	( 1354	GH 2	25AP1967	0.00173 )	( 1404	PC 2	10MY1967	C.01270 )

*Fragilaria construens* var. *minuta* Temp. and Per.

*Fragilaria construens* var. *minuta* Tempere and Peragallo, Diat. Monde Entier, ed. I, no. 89. 1889.

Very small form, only 4-10 $\mu$  long and 2-3 $\mu$  broad. Valves elliptical-lanceolate in shape and striae finer than in the nominate variety, 16-20 in 10 $\mu$ .

Although uncommon in modern collections, this entity is abundant in some subfossil material from the upper Great Lakes region. It is the same entity that we (Stoermer and Yang 1968) reported as an undetermined species abundant in Lake Huron sediments. Andrews (1966) reported entities under the name *F. construens* var. *venter* in the same size range. While it is conceivable that the range of variation in the above entity may include our specimens, it appears to us that the consistently narrower valves and the finer striae are sufficiently distinctive characteristics to separate the two taxa.

## 267 FRSPECGB TCT NO OF STATIONS 14

(46910	CH	0C1945	0.00109 )	(46915	CH	20FE1946	0.00569 )	(46906	CH	MY1547	C.00133 )
(46758	EV	5JN1937	0.00713 )	(46763	EV	23AU1937	0.04058 )	(46768	EV	16MR1938	C.01470 )
(46762	EV	18MR1938	0.02206 )	( 1260	F 3	6JL1964	0.00191 )	( 1268	E 2	15AU1964	C.00274 )
( 1270	F 1	10AU1964	0.00272 )	( 1285	F 1	15SE1964	0.01165 )	( 1305	F 2	110C1964	C.00173 )
( 1341	A 3	19AP1967	0.00217 )	( 1346	C 7	21AP1967	0.00267 )	(			

*Fragilaria construens* var. *pumila* Grun.

*Fragilaria construens* var. *pumila* Grunow in: Van Heurck, Syn. Diat.  
Belgique, pl. 45, fig. 21a. 1881.

Valves elliptic-lanceolate to lanceolate with somewhat protracted, rostrate apices. Size range and ornamentation of the valve surface the same as in the nominate variety.

## 245 FRCONSVF TCT NO OF STATIONS 24

( 3541	CH	1FE1881	0.04891 )	(46747	EV	1AU1937	0.00248 )	(46763	EV	23AU1937	C.02029 )
(46750	EV	24SE1937	0.00471 )	( 1264	C' 1	1CAU1964	0.00193 )	( 1304	F 1	110C1964	0.00494 )
( 1341	A 3	19AP1967	0.00108 )	( 1533	A 4	19SE1967	0.00464 )	( 1536	E 2	24SE1967	C.00273 )
( 1537	E 3	24SE1967	0.00431 )	( 1574	GS22	60C1967	0.00288 )	( 1544	MU 1	20C1967	C.00715 )
( 1520	HO 1	18SE1967	0.00471 )	( 1522	BH 1	18SE1967	0.00365 )	( 1527	TR 1	20SE1967	C.01258 )
( 1529	KW 1	20SE1967	0.01199 )	( 1531	GH 1	25SE1967	0.01691 )	( 1545	WL 1	20C1967	C.05406 )
( 1550	MR 1	50C1967	0.02478 )	( 1553	SG 1	60C1967	0.00734 )	( 1428	MU 2	29MY1967	C.00904 )
( 1417	HO 2	22MY1967	0.00374 )	( 1350	BH 2	19AP1967	0.04185 )	( 1354	GH 2	25AP1967	C.00345 )

*Fragilaria construens* var. *subsalina* Hust.

*Fragilaria construens* var. *subsalina* Hustedt, Mitt. geogr. Ges., Naturhist.  
Mus. Lübeck, 2 Reihe, 30:106, fig. 5-8. 1925.

Valves linear with parallel sides and cuneate, in the larger specimens somewhat protracted, ends. Size range and ornamentation of the valve surface as in the nominate variety.

## 247 FRCONSVF TCT NO OF STATIONS 9

(60973	CH	1876	0.02362 )	(46758	EV	5JN1937	0.01070 )	(46762	EV	18MR1938	C.02206 )
( 1279	E 1	16SE1964	0.00785 )	( 1341	A 3	19AP1967	0.00108 )	( 1569	GS17	50C1967	C.00149 )
( 1550	MR 1	50C1967	0.01239 )	( 1350	BH 2	19AP1967	0.00220 )	( 1404	MU 2	10MY1967	C.02541 )

*Fragilaria construens* var. *venter* (Ehr.) Grun.

*Fragilaria venter* Ehrenberg, Mikrogeol., pl. 14, fig. 50. 1854.

*Fragilaria construens* var. *venter* (Ehr.) Grunow in: Van Heurck, Syn. Diat.  
Belgique, pl. 45, figs. 21b, 22, 23, 24b, 26a-b. 1881.

Valves rhombic-elliptical to elliptical with somewhat protracted, rostrate ends. Maximum length of specimens from Lake Michigan does not exceed 10 $\mu$ . Ornamentation of the valve surface essentially similar to that of the nominate variety.

## 246 FRCONSVF TCT NO OF STATIONS 71

( 3540	CH	11MY1879	0.00466 )	( 3541	CH	1FE1881	0.00978 )	(46917	CH	12JA1946	C.00082 )
(46915	CH	20FE1946	0.00569 )	(46923	CH	22NO1946	0.00219 )	(46920	CH	20DE1946	C.00031 )
(46905	CH	JL1947	0.00123 )	(46916	CH	4MY1547	0.00068 )	(46919	CH	5JN1947	C.00303 )
(46907	CH	JL1947	0.00049 )	(46922	CH	21AU1947	0.00388 )	(46758	EV	5JN1937	C.01426 )
(46771	EV	11JN1937	0.00238 )	(46743	EV	20JN1937	0.00428 )	(46764	EV	17JL1937	C.04835 )
(46747	EV	1AU1937	0.01238 )	(46752	EV	15SE1937	0.02177 )	(46750	EV	24SE1937	C.00943 )
(46748	EV	130C1937	0.04270 )	(46767	EV	27OC1937	0.01547 )	(46768	EV	16MR1938	C.08820 )
(46762	EV	18MR1938	0.02206 )	( 1274	D 1	17SE1964	0.00469 )	( 1279	E 1	16SE1964	C.00785 )
( 1284	E 6	17SE1964	0.00318 )	( 1251	C' 2	16OC1964	0.00245 )	( 1257	D 6	14OC1964	C.00381 )
( 1303	E 6	130C1964	0.01119 )	( 1322	E 6	7NO1964	0.00333 )	( 1340	C 7	28MR1967	0.00145 )
( 1374	E 2	7MY1967	0.00598 )	( 1452	E 2	14JL1967	0.00213 )	( 1537	E 3	24SE1967	C.00431 )
( 1538	E 5	23SE1967	0.07181 )	( 1541	E 2	11GC1967	0.00532 )	( 1383	GS 7	10MY1967	C.00535 )
( 1387	GS11	12MY1967	0.00396 )	( 1392	GS16	12MY1967	0.00308 )	( 1354	GS18	13MY1967	C.00344 )
( 1396	GS20	13MY1967	0.00148 )	( 1398	GS22	14MY1967	0.00607 )	( 1557	GS 4	30C1967	C.00374 )
( 1559	GS 7	40C1967	0.00350 )	( 1561	GS 9	40C1967	0.00587 )	( 1563	GS11	50C1967	C.00234 )
( 1566	GS14	50C1967	0.00183 )	( 1567	GS15	50C1967	0.00476 )	( 1572	GS20	60C1967	C.00180 )
( 1574	GS22	60C1967	0.31065 )	( 1575	GS28	60C1967	0.00129 )	( 1544	MU 1	20C1967	C.01668 )

( 1521	SH 1	18SE1967	0.01154 )	( 1523	RA 1	19SE1967	0.01845 )	( 1526	MC 1	20SE1967	0.15930 )
( 1527	IR 1	20SE1967	0.13836 )	( 1528	SB 1	20SE1967	0.07219 )	( 1529	KW 1	20SE1967	0.07195 )
( 1545	WL 1	20C1967	0.04730 )	( 1552	SM 1	60C1967	0.15847 )	( 1550	MR 1	50C1967	0.08673 )
( 1553	SG 1	60C1967	0.03672 )	( 1417	MC 2	22MY1967	0.00374 )	( 1350	BH 2	19AP1967	0.03744 )
( 1399	PW 2	5MY1967	0.01360 )	( 1401	MC 2	6MY1967	0.03528 )	( 1402	TR 2	6MY1967	0.04873 )
( 1352	KW 2	21AP1967	0.04295 )	( 1404	MC 2	10MY1967	0.02541 )	( 1405	ES 2	12MY1967	0.00645 )
( 1407	SM 2	14MY1967	0.37619 )	( 1349	CI 2	19AP1967	0.00359 )				

*Fragilaria crotonensis* Kitton

*Fragilaria crotonensis* Kitton, Sci. Gossip, 5:110, fig. 81. 1869.

Cells in girdle view lanceolate, with blunt ends and expanded central portions. Cells joined by valve faces of the expanded central portion into long, ribbon-shaped colonies. Specimens from Lake Michigan 40-112 $\mu$  long and 2-4 $\mu$  broad at the widest part of the valve. Valves very elongate, spindle-shaped, with expanded central portion, tapering gradually to near the apices which are bluntly rounded to subcapitate. Pseudoraphe very narrow, linear. In most specimens a central area is present in the form of a broad transverse fascia. In some specimens this area is indistinctly bordered by partially developed striae and in some specimens, particularly in the smaller size range, the central area is entirely lacking. The striae are indistinct and sometimes irregular 12-16 in 10 $\mu$ .

248 FRAGRITON ICT NO OF STATICS 320

( 60973	CH	1876	44.63863 )	( 3540	CH	11MY1879	12.27228 )	( 3541	CH	1FE1881	6.72592 )
( 3507	CH	19FE1881	10.98030 )	( 46510	CH	0C1945	12.38913 )	( 46921	CH	23NO1945	23.28799 )
( 46508	CH	0E1945	12.10473 )	( 46917	CH	12JA1946	11.73145 )	( 46915	CH	20FE1946	17.38461 )
( 46914	CH	19AP1946	11.97185 )	( 46524	CH	10MY1946	10.38574 )	( 46923	CH	22NO1946	34.66364 )
( 46920	CH	20CE1946	71.07423 )	( 46505	CH	JA1947	42.78098 )	( 46909	CH	MR1947	8.43313 )
( 46912	CH	AP1947	36.24237 )	( 46916	CH	4MY1947	16.25369 )	( 46906	CH	MY1947	14.32250 )
( 46919	CH	5JUN1947	16.66893 )	( 46507	CH	JL1947	30.03308 )	( 46913	CH	6AU1947	76.14265 )
( 46922	CH	21AU1947	35.53409 )	( 46758	EV	5JUN1937	9.28607 )	( 46771	EV	11JUN1937	12.64799 )
( 46743	EV	20JUN1937	20.98141 )	( 46745	EV	3JL1937	28.67293 )	( 46770	EV	9JL1937	28.38739 )
( 46764	EV	17JL1937	29.55681 )	( 46757	EV	25JL1937	43.94588 )	( 46747	EV	1AU1937	55.24171 )
( 46763	EV	23AU1937	32.38635 )	( 46765	EV	30AU1937	29.82710 )	( 46769	EV	7SE1937	55.92705 )
( 46752	EV	15SE1937	40.83586 )	( 46760	EV	22SE1937	45.21954 )	( 46750	EV	24SE1937	42.75816 )
( 46744	EV	6CC1937	56.67186 )	( 46748	EV	13CC1937	2.86080 )	( 46767	EV	27OC1937	68.45383 )
( 46749	EV	12MR1938	36.70348 )	( 46768	EV	16MR1938	9.87799 )	( 46762	EV	18MR1938	50.63960 )
( 46751	EV	30MR1938	13.44350 )	( 46772	EV	18AP1938	12.12207 )	( 46756	EV	27AP1938	7.80429 )
( 46755	EV	19MY1938	5.19919 )	( 46761	EV	27MY1938	32.58475 )	( 46766	EV	14DE1938	33.26596 )
( 1223	B 3	18MY1964	2.51582 )	( 1224	B 4	18MY1964	1.64690 )	( 1225	C 6	15MY1964	7.13446 )
( 1226	C 7	16MY1964	10.12177 )	( 1227	C* 2	13MY1964	6.83189 )	( 1228	D 2	14MY1964	3.40606 )
( 1229	D 5	14MY1964	11.98960 )	( 1230	E 2	16MY1964	6.84546 )	( 1231	E 3	16MY1964	2.39703 )
( 1232	E 5	16MY1964	8.88727 )	( 1233	B 3	5JUN2964	16.33682 )	( 1234	B 3	18JUN1964	25.51452 )
( 1235	C 7	16JUN1964	22.93330 )	( 1439	B 6	5JUN1964	14.31369 )	( 1236	C* 1	8JUN1964	11.76223 )
( 1237	C* 2	8JUN1964	15.33900 )	( 1238	D 3	11JUN1964	3.22000 )	( 1239	D 4	11JUN1964	6.05225 )
( 1240	D 6	10JUN1964	8.16063 )	( 1241	E 2	13JUN1964	8.27986 )	( 1242	E 3	13JUN1964	0.41963 )
( 1243	E 6	13JUN1964	8.91589 )	( 1244	F 1	11JUN1964	27.78416 )	( 1245	F 2	11JUN1964	14.52182 )
( 1246	F 3	11JUN1964	14.22339 )	( 1247	B 3	14JL1964	24.50163 )	( 1248	B 3	24JL1964	27.03554 )
( 1440	B 6	11JL1964	15.78656 )	( 1441	B 6	24JL1964	12.58838 )	( 1249	C 3	8JL1964	14.62878 )
( 1250	C 6	10JL1964	12.26310 )	( 1251	C 7	16JL1964	11.82282 )	( 1252	C* 1	16JL1964	16.55508 )
( 1253	C* 2	16JL1964	16.82947 )	( 1254	D 2	15JL1964	10.24899 )	( 1255	D 5	15JL1964	5.45793 )
( 1256	E 2	14JL1964	5.43160 )	( 1257	E 3	14JL1964	2.17729 )	( 1258	F 1	6JL1964	37.62181 )
( 1259	F 2	6JL1964	29.48996 )	( 1260	F 3	6JL1964	25.25545 )	( 1261	B 3	2AU1964	42.31100 )
( 1262	B 3	17AU1964	62.32675 )	( 1442	B 6	2AU1964	26.62914 )	( 1443	B 6	16AU1964	57.23322 )
( 1263	C 7	15AU1964	54.92393 )	( 1264	C* 1	10AU1964	20.67886 )	( 1265	C* 2	10AU1964	40.21638 )
( 1266	D 3	18AU1964	27.99214 )	( 1267	D 6	18AU1964	32.38219 )	( 1268	E 2	15AU1964	22.78696 )
( 1269	F 3	15AU1964	23.21437 )	( 1270	F 1	10AU1964	35.45540 )	( 1271	C 7	22SE1964	6.95306 )
( 1272	C* 1	10SE1964	34.51359 )	( 1273	C* 2	10SE1964	35.57201 )	( 1274	D 1	17SE1964	35.86073 )
( 1275	D 2	17SE1964	38.50073 )	( 1276	D 3	18SE1964	26.59811 )	( 1277	D 4	18SE1964	22.12169 )
( 1278	D 6	18SE1964	11.13801 )	( 1279	E 1	16SE1964	31.88832 )	( 1280	E 2	16SE1964	5.93941 )
( 1281	E 3	16SE1964	25.07428 )	( 1282	E 4	16SE1964	36.45428 )	( 1283	E 5	16SE1964	22.50669 )
( 1284	E 6	17SE1964	42.81447 )	( 1285	F 1	15SE1964	38.32623 )	( 1286	F 2	15SE1964	42.14098 )
( 1287	F 3	15SE1964	43.78502 )	( 1288	B 3	15OC1964	57.29460 )	( 1445	B 6	14OC1964	18.94977 )
( 1289	C 7	14OC1964	10.46568 )	( 1290	C* 1	16CC1964	49.34621 )	( 1291	C* 2	16CC1964	35.03918 )
( 1292	D 1	15OC1964	38.08884 )	( 1293	D 2	15CC1964	21.79039 )	( 1294	D 3	15OC1964	28.38118 )
( 1295	D 4	15OC1964	24.14079 )	( 1296	D 5	14OC1964	14.32112 )	( 1297	D 6	14CC1964	10.12909 )
( 1298	E 1	12OC1964	34.11783 )	( 1299	E 2	12OC1964	35.40685 )	( 1300	E 3	13OC1964	32.57561 )
( 1301	E 4	13OC1964	39.25638 )	( 1302	E 5	13CC1964	41.66328 )	( 1303	E 6	13OC1964	17.63124 )
( 1304	F 1	11OC1964	75.20003 )	( 1305	F 2	11OC1964	75.33960 )	( 1306	F 3	11OC1964	76.05742 )
( 1307	B 6	NO1964	36.87399 )	( 1308	C 7	6NO1964	16.39343 )	( 1309	C* 1	10NO1964	58.64698 )
( 1310	C* 2	10NO1964	50.47618 )	( 1311	D 1	8NO1964	48.03673 )	( 1312	D 2	8NO1964	45.41362 )
( 1313	D 3	9NO1964	34.59459 )	( 1314	D 4	9NO1964	35.78984 )	( 1315	D 5	9NO1964	27.07005 )
( 1316	D 6	9NO1964	39.13568 )	( 1317	E 1	6NO1964	48.24997 )	( 1318	E 2	7NO1964	44.21361 )
( 1319	E 3	7NO1964	47.83598 )	( 1320	E 4	7NO1964	46.18407 )	( 1321	E 5	7NO1964	48.49007 )
( 1322	F 6	7NO1964	51.78790 )	( 1323	F 1	6NO1964	67.80487 )	( 1324	F 2	6NO1964	65.87007 )
( 1325	F 3	6NO1964	48.13722 )	( 1336	C 3	27JA1967	6.46987 )	( 1337	C 3	2MR1967	3.36866 )
( 1338	C 3	28MR1967	2.71593 )	( 1339	C 5	28MR1967	2.20739 )	( 1340	C 7	28MR1967	2.91087 )
( 1341	A 3	19AP1967	2.74129 )	( 1342	A 4	19AP1967	3.81499 )	( 1344	C 3	25AP1967	1.50550 )
( 1345	C 5	25AP1967	2.74838 )	( 1346	C 7	21AP1967	2.61707 )	( 1347	E 2	23AP1967	1.62914 )
( 1348	E 5	23AP1967	1.75188 )	( 1368	A 3	4MY1967	4.21929 )	( 1369	A 4	4MY1967	0.33919 )



( 1370	A 6	3MY1967	6.41271 )	( 1371	C 3	4MY1967	6.54019 )	( 1372	C 5	5MY1967	6.36175 )
( 1373	C 7	5MY1967	0.47921 )	( 1374	E 2	7MY1967	2.30126 )	( 1375	E 3	7MY1967	1.88647 )
( 1376	E 5	6MY1967	3.98302 )	( 1408	A 3	23MY1967	4.69526 )	( 1409	A 4	23MY1967	2.10677 )
( 1410	A 6	24MY1967	6.39377 )	( 1411	C 3	31MY1967	2.87203 )	( 1412	C 5	31MY1967	1.94882 )
( 1413	C 7	25MY1967	2.23331 )	( 1414	E 2	28MY1967	2.38791 )	( 1415	E 3	28MY1967	0.44970 )
( 1416	E 5	28MY1967	2.77942 )	( 1431	A 3	12JN1967	3.82110 )	( 1432	A 4	13JN1967	4.49831 )
( 1423	C 3	17JN1967	4.97352 )	( 1434	C 5	17JN1967	2.53619 )	( 1435	C 7	13JN1967	7.52692 )
( 1436	E 2	15JN1967	1.88522 )	( 1437	E 3	15JN1967	0.45216 )	( 1438	E 5	14JN1967	3.90428 )
( 1446	A 3	11JL1967	2.39715 )	( 1447	A 4	11JL1967	12.77133 )	( 1448	A 6	10JL1967	5.44651 )
( 1449	C 3	16JL1967	5.08235 )	( 1450	C 5	16JL1967	8.93078 )	( 1451	C 7	16JL1967	10.60982 )
( 1452	E 2	14JL1967	8.79210 )	( 1453	E 3	15JL1967	0.57630 )	( 1454	E 5	15JL1967	15.56319 )
( 1504	A 3	28AU1967	32.14417 )	( 1505	A 4	28AU1967	32.46417 )	( 1506	A 6	29AU1967	20.50529 )
( 1508	C 3	25E1967	20.14227 )	( 1509	C 4	25E1967	29.32269 )	( 1510	C 7	29AU1967	26.11444 )
( 1511	E 2	15E1967	12.03303 )	( 1512	E 3	15E1967	24.18721 )	( 1513	E 5	31AU1967	51.43407 )
( 1532	A 3	18SE1967	44.38092 )	( 1533	A 4	19SE1967	44.84262 )	( 1534	A 6	19SE1967	43.86807 )
( 1535	C 7	20SE1967	16.44832 )	( 1536	E 2	24SE1967	19.27795 )	( 1537	E 3	24SE1967	16.90675 )
( 1538	E 5	23SE1967	27.06732 )	( 1539	C 3	40C1967	42.26627 )	( 1540	C 5	40C1967	38.21909 )
( 1541	E 2	11OC1967	37.99690 )	( 1542	E 3	11OC1967	24.20667 )	( 1543	E 5	10CC1967	28.15686 )
( 1377	GS 1	9MY1967	0.47101 )	( 1378	GS 2	9MY1967	3.53223 )	( 1379	GS 3	9MY1967	5.65534 )
( 1380	GS 4	9MY1967	9.41651 )	( 1381	GS 5	10MY1967	5.67667 )	( 1382	GS 6	10MY1967	2.91432 )
( 1383	GS 7	10MY1967	5.05239 )	( 1384	GS 8	10MY1967	2.19983 )	( 1385	GS 9	10MY1967	3.23044 )
( 1386	GS10	12MY1967	1.70928 )	( 1387	GS11	12MY1967	7.20849 )	( 1388	GS12	12MY1967	4.22323 )
( 1389	GS13	12MY1967	13.53686 )	( 1390	GS14	12MY1967	7.39871 )	( 1391	GS15	12MY1967	8.04482 )
( 1392	GS16	12MY1967	5.17767 )	( 1393	GS17	13MY1967	10.35503 )	( 1394	GS18	13MY1967	8.50004 )
( 1395	GS19	13MY1967	2.38392 )	( 1396	GS20	13MY1967	0.88047 )	( 1397	GS21	13MY1967	0.77832 )
( 1398	GS22	14MY1967	8.07602 )	( 1554	GS 1	30C1967	30.38496 )	( 1555	GS 2	30C1967	37.07626 )
( 1556	GS 3	30C1967	23.36131 )	( 1557	GS 4	30C1967	54.93272 )	( 1558	GS 5	40C1967	51.88678 )
( 1559	GS 7	40C1967	54.34706 )	( 1560	GS 8	40C1967	32.73036 )	( 1561	GS 9	40C1967	26.70657 )
( 1562	GS10	50C1967	30.22154 )	( 1563	GS11	50C1967	46.32184 )	( 1564	GS12	50C1967	73.16148 )
( 1565	GS13	50C1967	60.69363 )	( 1566	GS14	50C1967	49.44046 )	( 1567	GS15	50C1967	30.11876 )
( 1568	GS16	50C1967	31.00964 )	( 1569	GS17	50C1967	56.50111 )	( 1570	GS18	50C1967	48.59183 )
( 1571	GS19	60C1967	8.85106 )	( 1572	GS20	60C1967	6.68758 )	( 1573	GS21	60C1967	14.26764 )
( 1574	GS22	60C1967	31.81268 )	( 1575	GS28	60C1967	13.72761 )	( 1544	MU 1	20C1967	0.40031 )
( 1547	MS 1	20C1967	23.12175 )	( 1524	MI 1	20SE1967	15.76182 )	( 1546	LU 1	20C1967	3.44120 )
( 1520	HQ 1	18SE1967	18.85991 )	( 1521	SH 1	18SE1967	18.46295 )	( 1522	BH 1	18SE1967	0.00912 )
( 1523	RA 1	19SE1967	41.32840 )	( 1525	PW 1	20SE1967	25.62317 )	( 1526	MO 1	20SE1967	15.47477 )
( 1527	TR 1	20SE1967	5.23270 )	( 1528	SB 1	20SE1967	26.10452 )	( 1529	KW 1	20SE1967	17.65199 )
( 1530	FR 1	24SE1967	18.88188 )	( 1531	GH 1	25SE1967	0.48183 )	( 1545	WL 1	20C1967	3.13535 )
( 1548	CA 1	30C1967	68.59178 )	( 1549	MQ 1	40C1967	14.03316 )	( 1551	ES 1	50C1967	38.21391 )
( 1552	SM 1	60C1967	29.47507 )	( 1550	MR 1	50C1967	4.55653 )	( 1553	SG 1	60C1967	16.80376 )
( 1428	MU 2	29MY1967	1.06059 )	( 1426	MS 2	25MY1967	7.72703 )	( 1351	MI 2	21AP1967	1.43988 )
( 1427	LU 2	29MY1967	2.90557 )	( 1417	HO 2	22MY1967	1.91416 )	( 1418	SH 2	22MY1967	5.97201 )
( 1350	BH 2	19AP1967	0.95152 )	( 1425	RA 2	25MY1967	12.02369 )	( 1399	PW 2	5MY1967	5.00544 )
( 1401	MO 2	6MY1967	1.97554 )	( 1402	TR 2	6MY1967	4.07191 )	( 1400	SB 2	6MY1967	5.81368 )
( 1352	KW 2	21AP1967	5.63477 )	( 1353	FR 2	23AP1967	0.07384 )	( 1354	GH 2	25AP1967	0.46949 )
( 1429	WL 2	29MY1967	2.03843 )	( 1403	CA 2	10MY1967	5.85851 )	( 1404	MQ 2	10MY1967	3.45528 )
( 1405	ES 2	12MY1967	5.57275 )	( 1407	SM 2	14MY1967	6.11453 )	( 1349	CI 2	15AP1967	2.12659 )
( 1406	GB 2	13MY1967	0.09435 )	( 1419	BU 2	23MY1967	12.59612 )	( 1420	IH 2	23MY1967	9.66767 )
( 1421	CH 2	23MY1967	11.10340 )	( 1422	GA 2	23MY1967	12.18004 )	( 1423	WA 2	25MY1967	19.52640 )
( 1424	KN 2	25MY1967	13.64242 )	( 1430	MC 2	12JN1967	4.34244 )	(			

*Fragilaria crotonensis* var. *oregona* Sov.

*Fragilaria crotonensis* var. *oregona* Sovereign, Trans. American Micr. Soc.  
77:107. pl. 2, figs. 1-3. 1958.

Cells in girdle view lanceolate, with expanded central portions and bluntly rounded to subcapitate ends. Cells joined by the valve faces of the expanded central portions into long, ribbon-shaped colonies. Specimens from Lake Michigan 55-150 $\mu$  long, 2.5-4 $\mu$  broad at the widest point. Valves elongate-lanceolate, central portion of the valve constricted, widest point lying on each side of the central area. Striae fine but distinct, 12-15 in 10 $\mu$ . Axial area narrow, central area a structureless transverse fascia.

This species is one of the most widely reported of all freshwater plankton diatoms. Although most authors have chosen to treat all entities having similar colony form under the single epithet, the forms found in Lake Michigan are clearly separable into at least three series on the basis of morphology. The obvious differences in the size range of populations occurring in different lakes in Europe has been commented upon by Huber-Pestalozzi (1942). In Lake Michigan we have found occasional populations of apparent auxospores in the size range of 70-90 $\mu$ , clearly smaller than the maximum size of two of the entities in the complex. Nipkow (1927) has reported similar observations from Lake Zurich. It seems clear to us that, in its general usage, the name *F. crotonensis* is applied to a complex of separate genetic entities. The proper taxonomic treatment of this complex is yet to be resolved. The treatment presented here appears reasonable on the grounds of morphologic criteria but further research may prove it to be inadequate.

( 46919 )	CH	5JN1947	0.00152 )	( 1235 )	C 7	16JN1964	0.00282 )	( 1248 )	B 3	24JL1964	C.C0788 )
( 1261 )	B 3	2AU1964	0.00589 )	( 1264 )	C* 1	10AU1964	0.00772 )	( 1299 )	E 2	120C1964	C.00314 )
( 1322 )	E 6	7NO1964	0.01000 )	( 1324 )	F 2	6NO1964	0.00466 )	( 1452 )	E 2	14JL1967	C.C0426 )
( 1454 )	E 5	15JL1967	0.00200 )	( 1532 )	A 3	18SE1967	0.00329 )	( 1533 )	A 4	19SE1967	C.C0928 )
( 1535 )	C 7	20SE1967	0.00322 )	( 1539 )	C 3	40C1967	0.00503 )	( 1393 )	GS17	13MY1967	C.00274 )
( 1395 )	GS19	13MY1967	0.00235 )	( 1544 )	MU 1	20C1967	0.01191 )	( 1547 )	MS 1	20C1967	C.01597 )
( 1521 )	SH 1	18SE1967	0.00577 )	( 1522 )	BH 1	18SE1967	0.05106 )	( 1523 )	RA 1	19SE1967	C.C1845 )
( 1531 )	GH 1	25SE1967	0.10989 )	( 1545 )	WL 1	20C1967	0.02703 )	( 1550 )	MR 1	50C1967	C.01239 )
( 1428 )	MU 2	29MY1967	0.25310 )	( 1426 )	MS 2	29MY1967	0.47244 )	( 1417 )	HD 2	22MY1967	C.02243 )
( 1350 )	BH 2	19AP1967	0.01542 )	( 1429 )	WL 2	29MY1967	0.04247 )	(			

### *Fragilaria heideni* Østrup

*Synedra inflata* Heiden, Mitt. Grossh. Meckl. Geol. Landesanst., 10(21): 14, fig. 19. 1900.

*Fragilaria heideni* Østrup, Danske Diat., p. 190, pl. 5, fig. 118. 1910.

*Fragilaria inflata* (Heid.) Hustedt in: Rabenhorst, Kryptog.-Fl. Deutschlands, 7(2)1:155, fig. 669. 1931. (non Pantocsek 1902).

Cells in girdle view rectangular, in life attached by the valve surfaces into band-shaped colonies. Valves lanceolate with expanded central portions and bluntly rounded to subcapitate ends. Specimens from Lake Michigan 22-40 $\mu$  long, 7-10 $\mu$  broad. Striae perpendicular to the midline of the valve throughout, 13-15 in 10 $\mu$ . Axial area wide, lanceolate, without any especially demarcated central area.

Previous reports indicate that this entity is a littoral form in large lakes. In Lake Michigan it has only been noted in inshore areas.

( 1350 )	BH 2	19AP1967	0.05506 )	( 1402 )	TR 2	6MY1967	0.00541 )	( 1404 )	MQ 2	10MY1967	C.C1270 )
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### *Fragilaria heideni* var. *istvanffy* (Pant.)

*Fragilaria istvanffy* Pantocsek, Res. Wiss. Erforsh. Balatonsees, p. 79, pl. 9, fig. 225, 1902.

*Fragilaria inflata* var. *istvanffy* (Pant.) Hustedt in: Rabenhorst, Kryptog.-Fl. Deutschlands, 7(2)1:156, fig. 669. 1931.

Differs from the nominate variety in having more or less strongly tri-undulate margins and subcapitate to capitate ends.

( 1350 )	BH 2	19AP1967	0.00220 )	(
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### *Fragilaria intermedia* Grun.

*Fragilaria intermedia* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 45, figs. 9-11. 1881.

Cells in girdle view elongate-rectangular, in life attached by the valve surfaces into long, band-shaped colonies. Valves linear-lanceolate to lanceolate with rostrate to subcapitate ends. Specimens from Lake Michigan 25-65 $\mu$  long, 3-5 $\mu$  broad. Transapical striae perpendicular to the apical axis throughout, coarsely structured, 8-13 in 10 $\mu$ , finely cross-lineate. Axial area narrow, linear distinctly bordered. Central area a unilateral fascia, not visibly thickened, often indistinct or containing rudimentary striae.

This entity shows a great deal of variation in populations from Lake Michigan. Although previous reports indicate that it is primarily littoral in most habitats, it is present in the offshore plankton from Lake Michigan and often in considerable quantity. The forms occurring in the offshore plankton tend to be more elongate and lanceolate rather than linear in outline and may represent a separate variety or form. Our observations to date, however, indicate that these forms grade into the nominate variety to the extent that they cannot be satisfactorily separated on the basis of morphologic characteristics.

Petersen (1938) and several other authors have called attention to the similarity of this taxon to *Synedra vaucheriae* Kütz. [*Fragilaria vaucheriae* (Kütz.) Peters.]. It is Peterson's contention, based on the observation of isotype material, that the two entities are synonymous. If this contention can be supported, the entity we treat here, as it is generally treated in the modern literature, will need to be renamed as it is easily distinguished from *S. vaucheriae* on several morphologic characteristics. The decision on this awaits the monographer with access to type material.

Ahlstrom (1936) reported *Fragilaria virescens* Ralfs abundant in collections from Lake Michigan. We suspect that he was, in fact, dealing with the entity we treat here.

255 FRINTERM ICI NO OF STATIONS 142

(46921	CH	23NO1945	C.00194	)	(46514	CH	19AP1946	0.00107	)	(46923	CH	22NO1946	C.00437	)
(46916	CH	4MY1947	0.00204	)	(46919	CH	5JN1947	0.39453	)	(46522	CH	21AU1947	C.00048	)
(46758	EV	5JN1937	1.09835	)	(46771	EV	11JN1937	0.00238	)	(46745	EV	3JL1937	C.02090	)
(46770	EV	9JL1937	0.28626	)	(46764	EV	17JL1937	0.20951	)	(46757	EV	25JL1937	C.29849	)
(46747	EV	1AU1937	0.45053	)	(46763	EV	23AU1937	0.87256	)	(46752	EV	15SE1937	C.39182	)
(46760	EV	22SE1937	0.05909	)	(46750	EV	24SE1937	0.03299	)	(46748	EV	13OC1937	C.02135	)
(46767	EV	27OC1937	0.03095	)	(46749	EV	12MR1938	0.03641	)	(46768	EV	16MR1938	C.05880	)
(46762	EV	18MR1938	0.19850	)	(46772	EV	18AP1938	0.00710	)	(46756	EV	27AP1938	C.01175	)
(46759	EV	19MY1938	0.01350	)	(46761	EV	27MY1938	0.01363	)	(46766	EV	14OE1938	C.04753	)
(1225	C 6	15MY1964	0.00784	)	(1226	C 7	16MY1964	0.01142	)	(1227	C* 2	13MY1964	C.00110	)
(1228	D 2	14MY1964	0.00389	)	(1229	D 5	14MY1964	0.01057	)	(1230	E 2	16MY1964	C.01778	)
(1231	E 3	16MY1964	0.00245	)	(1232	E 5	16MY1964	C.12870	)	(1233	B 3	5JN2964	C.00238	)
(1439	B 6	5JN1964	0.00599	)	(1236	C* 1	8JN1964	0.00700	)	(1239	D 4	11JN1964	C.10212	)
(1240	D 6	10JN1964	0.02301	)	(1241	E 2	13JN1964	0.02218	)	(1242	E 3	13JN1964	C.06294	)
(1243	E 6	13JN1964	0.03550	)	(1244	F 1	11JN1964	0.00329	)	(1245	F 2	11JN1964	C.00692	)
(1246	F 3	11JN1964	0.05379	)	(1252	C* 1	16JL1964	0.01395	)	(1254	D 2	15JL1964	C.00192	)
(1256	E 2	14JL1964	0.00916	)	(1257	E 3	14JL1964	0.01675	)	(1258	F 1	6JL1964	C.10212	)
(1260	F 3	6JL1964	0.00191	)	(1267	D 6	18AU1964	0.01513	)	(1268	E 2	15AU1964	C.00274	)
(1269	E 3	15AU1964	0.00274	)	(1270	F 1	10AU1964	0.00817	)	(1273	C* 2	10SE1964	C.00538	)
(1275	D 2	17SE1964	0.00645	)	(1284	E 6	17SE1964	0.00318	)	(1285	F 1	15SE1964	C.10483	)
(1289	C 7	14OC1964	0.01319	)	(1291	C* 2	16OC1964	C.00245	)	(1292	D 1	15OC1964	C.00373	)
(1297	D 6	14OC1964	0.00762	)	(1303	E 6	13CC1964	0.04478	)	(1305	F 2	11OC1964	C.00173	)
(1308	C 7	6NO1964	0.01217	)	(1313	D 3	9NO1964	C.00193	)	(1316	D 6	9NO1964	C.00756	)
(1318	E 2	7NO1964	0.00190	)	(1321	E 5	7NO1964	0.00319	)	(1322	E 6	7NO1964	C.02333	)
(1323	F 1	6NO1964	0.00139	)	(1324	F 2	6NO1964	0.00233	)	(1336	C 3	27JA1967	C.01348	)
(1337	C 3	2MR1967	0.51441	)	(1338	C 3	28MR1967	0.67964	)	(1339	C 5	28MR1967	C.43649	)
(1340	C 7	28MR1967	0.91624	)	(1341	A 3	19AP1967	1.51872	)	(1342	A 4	19AP1967	C.58831	)
(1343	A 6	19AP1967	0.24316	)	(1344	C 3	25AP1967	1.15808	)	(1345	C 5	25AP1967	C.45611	)
(1346	C 7	21AP1967	0.23367	)	(1347	E 2	23AP1967	0.06178	)	(1348	E 5	23AP1967	C.76765	)
(1368	A 3	4MY1967	0.73516	)	(1369	A 4	4MY1967	0.14164	)	(1370	A 6	3MY1967	C.44424	)
(1371	C 3	4MY1967	0.21007	)	(1372	C 5	5MY1967	C.12768	)	(1373	C 7	5MY1967	C.55835	)
(1374	E 2	7MY1967	0.37956	)	(1375	E 3	7MY1967	C.13234	)	(1376	E 5	6MY1967	C.98381	)
(1408	A 3	23MY1967	0.06260	)	(1409	A 4	23MY1967	0.10415	)	(1410	A 6	24MY1967	C.03383	)
(1411	C 3	31MY1967	0.14360	)	(1412	C 5	31MY1967	C.07155	)	(1413	C 7	25MY1967	C.01264	)
(1414	E 2	28MY1967	0.02687	)	(1415	E 3	28MY1967	0.00675	)	(1416	E 5	28MY1967	C.01093	)
(1511	E 2	1SE1967	0.00307	)	(1536	E 2	24SE1967	0.00818	)	(1537	E 3	24SE1967	C.00431	)
(1538	E 5	23SE1967	0.04972	)	(1387	GS11	12MY1967	C.01980	)	(1389	GS13	12MY1967	C.00516	)
(1350	GS14	12MY1967	0.01174	)	(1392	GS16	12MY1967	0.01849	)	(1358	GS22	14MY1967	C.00607	)
(1559	GS 7	4OC1967	0.00350	)	(1567	GS15	5OC1967	C.00159	)	(1571	GS19	6OC1967	C.00059	)
(1574	GS22	6OC1967	0.00575	)	(1575	GS28	6OC1967	0.00258	)	(1522	BH 1	18SE1967	C.00365	)
(1526	MO 1	20SE1967	0.06258	)	(1527	TR 1	20SE1967	0.13836	)	(1528	SB 1	20SE1967	C.01444	)
(1629	KW 1	20CF1967	2.37436	)	(1630	FR 1	24SE1967	0.02000	)	(1551	ES 1	5OC1967	C.01598	)
(1552	SM 1	6OC1967	0.02641	)	(1550	MR 1	5OC1967	0.06195	)	(1553	SG 1	6OC1967	C.01469	)
(1351	MI 2	21AP1967	0.00621	)	(1427	LU 2	29MY1967	0.01211	)	(1418	SH 2	22MY1967	C.01555	)
(1350	BH 2	19AP1967	C.16960	)	(1399	PH 2	5MY1967	C.04081	)	(1401	PO 2	6MY1967	C.03528	)
(1402	TR 2	6MY1967	0.02707	)	(1352	KW 2	21AP1967	C.18038	)	(1353	FR 2	23AP1967	C.01055	)
(1354	GH 2	25AP1967	0.00518	)	(1404	MQ 2	10MY1967	0.01270	)	(1407	SM 2	14MY1967	C.01194	)
(1421	CH 2	23MY1967	0.01735	)										

*Fragilaria intermedia* var. *fallax* (Grun.)

*Synedra (amphicephala* v. ??) *fallax* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 39, fig. 16c. 1881.

*Fragilaria vaucheriae* var. *fallax* (Grun.) A. Cleve-Euler, K. Svenska Vet.-Akad. Handl., Fjärde Ser., 4(1):43, figs. 353s-x. 1953.

Valves more elongate and narrower than in the nominate variety, occasional specimens to 120 $\mu$  long, linear to linear-lanceolate. Other features essentially as in the nominate variety.

256 FRINTEVL TCT NO OF STATICS 256

(160973	CH	1876	19.88663	(13540	CH	11MY1879	4.78964	(13541	CH	1FE1881	C.65538
(13507	CH	19FE1881	1.81118	(146910	CH	0C1945	3.12404	(146921	CH	23NO1945	1.70214
(146908	CH	DE1945	0.21148	(146517	CH	12JA1946	0.66676	(146915	CH	20FE1946	1.47954
(146914	CH	19AP1946	3.60907	(146924	CH	10MY1946	2.43030	(146923	CH	22NO1946	5.75250
(146920	CH	20DE1946	2.91402	(146905	CH	JA1947	3.14622	(146909	CH	MR1947	3.11006
(146912	CH	AP1947	0.90836	(146916	CH	4MY1947	0.48518	(146906	CH	MY1947	C.51768
(146919	CH	5JN1947	0.00303	(146907	CH	JL1947	0.70515	(146913	CH	6AU1947	C.02092
(146922	CH	21AU1947	0.37802	(146758	EV	5JN1937	4.69296	(146771	EV	11JN1937	C.39941
(146743	EV	20JN1937	2.99734	(146745	EV	3JL1937	10.53292	(146770	EV	9JL1937	C.83492
(146764	EV	17JL1937	2.48187	(146757	EV	25JL1937	0.89548	(146747	EV	1AU1937	8.59470
(146763	EV	23AU1937	3.40905	(146765	EV	30AU1937	0.62465	(146769	EV	7SE1937	C.65475
(146752	EV	15SE1937	9.14236	(146760	EV	22SE1937	9.23728	(146750	EV	24SE1937	10.42560
(146748	EV	13OC1937	3.97096	(146767	EV	27OC1937	3.79096	(146749	EV	12MR1938	4.41801
(146768	EV	16MR1938	5.35058	(146762	EV	18MR1938	5.77856	(146751	EV	30MR1938	7.50335
(146772	EV	18AP1938	3.57700	(146756	EV	27AP1938	2.58576	(146759	EV	19MY1938	2.64686
(146761	EV	27MY1938	2.67088	(146766	EV	14DE1938	4.72117	(1223	B 3	18MY1964	C.02656
(1224	B 4	18MY1964	0.07646	(1225	C 6	15MY1964	0.14112	(1226	C 7	16MY1964	C.05327
(1227	C* 2	13MY1964	0.06470	(1228	D 2	14MY1964	0.40873	(1229	D 5	14MY1964	C.54133
(1231	E 3	16MY1964	0.11007	(1232	E 5	16MY1964	1.21743	(1234	B 3	18JN1964	C.00562
(1439	B 6	5JN1964	0.00795	(1236	C* 1	8JN1964	0.00700	(1237	C* 2	8JN1964	C.00258
(1238	D 3	11JN1964	C.28000	(1239	D 4	11JN1964	0.37830	(1240	D 6	10JN1964	C.02301
(1241	E 2	13JN1964	0.22770	(1242	E 3	13JN1964	C.11090	(1243	E 6	13JN1964	C.03758
(1244	F 1	11JN1964	0.00768	(1245	F 2	11JN1964	C.02766	(1246	F 3	11JN1964	C.20917
(1248	B 3	24JL1964	0.00197	(1250	C 6	10JL1964	0.00822	(1252	C* 1	16JL1964	C.02232
(1254	D 2	15JL1964	0.00958	(1256	E 2	14JL1964	C.07694	(1257	E 3	14JL1964	C.01436
(1258	F 1	6JL1964	0.01416	(1259	F 2	6JL1964	C.00620	(1260	F 3	6JL1964	C.01528
(1261	B 3	2AU1964	0.00196	(1263	C 7	15AU1964	0.00400	(1264	C* 1	10AU1964	C.00193
(1265	C* 2	10AU1964	0.00671	(1269	E 3	15AU1964	0.00548	(1270	F 1	1CAU1964	C.00272
(1271	C 7	22SE1964	0.00653	(1273	C* 2	10SE1964	0.00538	(1278	D 6	18SE1964	C.00384
(1279	E 1	16SE1964	0.00393	(1280	E 2	16SE1964	0.00681	(1281	E 3	16SE1964	C.00392
(1284	E 6	17SE1964	0.00635	(1285	F 1	15SE1964	0.04659	(1286	F 2	15SE1964	C.01095
(1288	B 3	15OC1964	0.00653	(1445	B 6	14OC1964	0.00652	(1289	C 7	14OC1964	C.00440
(1295	D 4	15OC1964	0.00595	(1297	D 6	14OC1964	0.07997	(1298	E 1	12OC1964	C.01077
(1300	E 3	13OC1964	0.00716	(1302	E 5	13OC1964	C.02429	(1303	E 6	13OC1964	C.10075
(1304	F 1	11OC1964	0.00494	(1307	B 6	NC1964	C.01082	(1308	C 7	6NC1964	C.00912
(1313	D 3	9NO1964	0.00386	(1314	D 4	9NO1964	C.00287	(1316	D 6	9NO1964	C.05289
(1317	E 1	6NO1964	0.00383	(1319	E 3	7NO1964	C.00262	(1320	E 4	7NO1964	C.00207
(1321	E 5	7NO1964	0.00638	(1322	E 6	7NO1964	C.02999	(1324	F 2	6NO1964	C.00466
(1325	F 3	6NO1964	0.00252	(1336	C 3	27JA1967	0.02888	(1337	C 3	2MR1967	C.10876
(1338	C 3	28MR1967	0.01983	(1339	C 5	28MR1967	0.02806	(1340	C 7	28MR1967	C.06036
(1341	A 3	19AP1967	0.10197	(1342	A 4	19AP1967	0.34829	(1343	A 6	19AP1967	C.08962
(1344	C 3	25AP1967	0.11581	(1345	C 5	25AP1967	0.21051	(1346	C 7	21AP1967	C.46733
(1347	E 2	23AP1967	0.38046	(1348	E 5	23AP1967	0.52776	(1368	A 3	4MY1967	C.43984
(1369	A 4	4MY1967	0.27582	(1370	A 6	3MY1967	0.60536	(1371	C 3	4MY1967	1.18657
(1372	C 5	5MY1967	0.49652	(1373	C 7	5MY1967	0.59901	(1374	E 2	7MY1967	C.50209
(1375	E 3	7MY1967	0.42109	(1376	E 5	6MY1967	1.83832	(1408	A 3	23MY1967	C.62603
(1409	A 4	23MY1967	0.35410	(1410	A 6	24MY1967	0.03383	(1411	C 3	31MY1967	C.62185
(1412	C 5	31MY1967	0.58928	(1413	C 7	25MY1967	0.88448	(1414	E 2	28MY1967	C.47C19
(1415	E 3	28MY1967	0.31479	(1416	E 5	28MY1967	1.98998	(1431	A 3	12JN1967	C.04635
(1432	A 4	13JN1967	3.03975	(1433	C 3	17JN1967	1.13034	(1434	C 5	17JN1967	1.15145
(1435	C 7	13JN1967	0.38519	(1436	E 2	15JN1967	1.64640	(1437	E 3	15JN1967	3.01456
(1438	E 5	14JN1967	7.87945	(1446	A 3	11JL1967	0.00245	(1449	C 3	16JL1967	C.89419
(1450	C 5	16JL1967	0.06665	(1451	C 7	16JL1967	0.00394	(1452	E 2	14JL1967	C.13412
(1453	E 3	15JL1967	0.64707	(1504	A 3	28AU1967	0.01234	(1510	C 7	29AU1967	C.00316
(1511	E 2	1SE1967	0.00614	(1512	E 3	1SE1967	0.02356	(1536	E 2	24SE1967	C.03545
(1537	E 3	24SE1967	0.00863	(1538	E 5	23SE1967	0.07734	(1539	C 3	4OC1967	C.01006
(1540	C 5	4OC1967	0.02482	(1541	E 2	11OC1967	0.00532	(1542	E 3	11OC1967	C.00509
(1377	GS 1	9MY1967	5.26420	(1378	GS 2	9MY1967	13.83457	(1379	GS 3	9MY1967	9.09879
(1380	GS 4	9MY1967	9.18110	(1381	GS 5	10MY1967	12.18814	(1382	GS 6	10MY1967	15.34875
(1383	GS 7	10MY1967	12.35030	(1384	GS 8	10MY1967	13.58721	(1385	GS 9	10MY1967	8.07610
(1386	GS10	12MY1967	14.67565	(1387	GS11	12MY1967	4.71324	(1388	GS12	12MY1967	C.58522
(1389	GS13	12MY1967	0.51569	(1390	GS14	12MY1967	0.75749	(1391	GS15	12MY1967	3.35201
(1392	GS16	12MY1967	4.53046	(1393	GS17	13MY1967	5.75279	(1394	GS18	13MY1967	3.73275
(1395	GS19	13MY1967	0.29836	(1396	GS20	13MY1967	0.00444	(1397	GS21	13MY1967	C.02028
(1398	GS22	14MY1967	0.35465	(1554	GS 1	3CC1967	0.00712	(1555	GS 2	3OC1967	C.01412
(1557	GS 4	3OC1967	0.03363	(1558	GS 5	4OC1967	0.02775	(1559	GS 7	4OC1967	C.00350
(1560	GS 8	4OC1967	0.01417	(1561	GS 9	4OC1967	0.01761	(1562	GS10	5OC1967	C.14800
(1563	GS11	5OC1967	0.03507	(1564	GS12	5OC1967	0.00823	(1565	GS13	5OC1967	C.01014
(1566	GS14	5OC1967	0.05870	(1567	GS15	5OC1967	0.03175	(1568	GS16	5OC1967	C.11712
(1569	GS17	5OC1967	0.41621	(1570	GS18	5OC1967	0.00992	(1571	GS19	6OC1967	C.00826
(1573	GS21	6OC1967	0.00560	(1574	GS22	6OC1967	0.02301	(1575	GS28	6OC1967	C.00516
(1544	MU 1	20C1967	0.06238	(1524	M1 1	20SE1967	0.02189	(1546	LU 1	20C1967	C.01000
(1520	HO 1	18SE1967	0.00943	(1521	SH 1	18SE1967	0.06347	(1523	RA 1	19SE1967	C.02768

( 1526	MO 1	20SE1967	0.21619 )	( 1527	TR 1	20SE1967	C.27044 )	( 1529	KW 1	20SE1967	0.02398 )
( 1530	FR 1	24SE1967	0.05001 )	( 1545	WL 1	20CI1967	C.02703 )	( 1548	CA 1	30CI1967	C.05088 )
( 1552	SM 1	60CI1967	0.13206 )	( 1550	MR 1	50CI1967	C.30975 )	( 1553	SG 1	60CI1967	C.01469 )
( 1428	MU 2	29MY1967	0.15668 )	( 1426	MS 2	29MY1967	C.45144 )	( 1351	MI 2	21AP1967	1.34057 )
( 1427	LU 2	25MY1967	2.51816 )	( 1417	HC 2	22MY1967	2.93106 )	( 1418	SP 2	22MY1967	C.80871 )
( 1350	BH 2	19AP1967	0.14097 )	( 1425	RA 2	25MY1967	C.55698 )	( 1399	PW 2	5MY1967	1.30577 )
( 1401	MO 2	6MY1967	1.97554 )	( 1402	TR 2	6MY1967	2.51245 )	( 1400	SB 2	6MY1967	2.95449 )
( 1352	KW 2	21AP1967	2.74867 )	( 1353	FR 2	23AP1967	0.29536 )	( 1354	GH 2	25AP1967	C.23302 )
( 1429	WL 2	29MY1967	0.40344 )	( 1403	CA 2	10MY1967	10.04315 )	( 1404	MC 2	10MY1967	C.72409 )
( 1405	ES 2	12MY1967	0.25155 )	( 1407	SM 2	14MY1967	C.11345 )	( 1349	CI 2	19AP1967	C.63223 )
( 1406	GB 2	13MY1967	0.00270 )	( 1419	BU 2	23MY1967	C.95203 )	( 1420	IH 2	23MY1967	C.12085 )
( 1421	CH 2	23MY1967	0.13879 )	( 1422	GA 2	23MY1967	C.42916 )	( 1423	WA 2	25MY1967	1.84987 )
( 1424	KN 2	25MY1967	0.46629 )								

*Fragilaria leptostauron* (Ehr.) Hust.

*Biblarium leptostauron* Ehrenberg, Mikrogeol., pl. 12, figs. 25-36. 1854.

*Fragilaria leptostauron* (Ehr.) Hustedt in: Rabenhorst, Kryptog.-Fl.

Deutschland, 7(2)1:153, figs. 668a-b. 1931.

Cells in girdle view short rectangular, attached by the valve faces into short, often irregular or disorganized, band-shaped colonies. Valves lanceolate with extremely expanded centers, larger specimens cruciate in outline. This central expansion appears as a line or double line, depending on the level of focus, when the colony is seen in girdle view. Specimens from Lake Michigan 8-30 $\mu$  long, 7-18 $\mu$  broad. Striae very coarse, chambered 5-9 in 10 $\mu$ , distinctly cross lineate. Axial area moderately broad, lanceolate in shape. No distinguishable central area is present. This species is extremely variable in outline and ornamentation and deformed or abnormal specimens are common in our collections.

257 FRLEPTCS TOT NC CF STATICS 107

( 60973	CH	1876	0.11809 )	( 3540	CH	11MY1875	0.05125 )	( 3541	CH	1FE1881	C.00978 )
( 3507	CH	19FE1881	0.04528 )	( 46521	CH	23AD1945	0.00905 )	( 46917	CH	12JA1946	0.00139 )
( 46915	CH	20FE1946	0.03983 )	( 46514	CH	19AP1946	0.00854 )	( 46924	CH	10MY1946	C.00635 )
( 46923	CH	22NO1946	0.02404 )	( 46920	CH	20DE1946	0.00585 )	( 46905	CH	JA1947	C.00245 )
( 46909	CH	MR1947	0.00455 )	( 46516	CH	4MY1947	0.00475 )	( 46906	CH	MY1947	C.00796 )
( 46919	CH	5JN1947	0.00910 )	( 46907	CH	JL1947	0.00937 )	( 46922	CH	21AU1947	C.01357 )
( 46758	EV	5JN1937	0.15334 )	( 46771	EV	11JN1937	0.00475 )	( 46743	EV	20JN1937	C.02569 )
( 46764	EV	17JL1937	0.10475 )	( 46757	EV	25JL1937	C.11073 )	( 46747	EV	1AU1937	C.05198 )
( 46763	EV	23AU1937	0.12175 )	( 46765	EV	30AU1937	0.00558 )	( 46752	EV	15SE1937	C.17414 )
( 46760	EV	22SE1937	0.00985 )	( 46750	EV	24SE1937	0.01414 )	( 46744	EV	60C1937	0.00488 )
( 46748	EV	130C1937	0.40564 )	( 46767	EV	270C1937	C.06189 )	( 46768	EV	16MR1938	C.04410 )
( 46762	EV	18MR1938	0.15439 )	( 46756	EV	27AP1938	0.00336 )	( 46759	EV	19MY1938	C.00338 )
( 46766	EV	14DE1938	0.03169 )	( 1235	C 7	16JN1964	0.00282 )	( 1238	D 3	11JN1964	C.00200 )
( 1240	D 6	10JN1964	0.05829 )	( 1243	E 6	13JN1964	C.09396 )	( 1252	C* 1	16JL1964	C.00558 )
( 1264	C* 1	10AU1964	0.00193 )	( 1265	C* 2	10AU1964	0.00224 )	( 1267	D 6	18AU1964	0.00216 )
( 1270	F 1	1CAU1964	0.00272 )	( 1271	C 7	22SE1964	0.01306 )	( 1279	E 1	16SE1964	C.01571 )
( 1283	E 5	16SE1964	0.01226 )	( 1284	E 6	17SE1964	0.02542 )	( 1285	F 1	15SE1964	0.01165 )
( 1297	D 6	140C1964	0.00381 )	( 1300	E 3	130C1964	C.00358 )	( 1302	E 5	130C1964	C.01215 )
( 1303	E 6	130C1964	C.00560 )	( 1308	C 7	6NO1964	C.00304 )	( 1317	E 1	6NO1964	C.00191 )
( 1318	E 2	7NO1964	0.00190 )	( 1322	E 6	7NO1964	C.01666 )	( 1338	C 3	28MR1967	0.00264 )
( 1341	A 3	19AP1967	0.00217 )	( 1343	A 6	19AP1967	0.00556 )	( 1348	E 5	23AP1967	C.00274 )
( 1368	A 3	4MY1967	0.00314 )	( 1371	C 3	4MY1967	C.00231 )	( 1411	C 3	31MY1967	C.00410 )
( 1449	C 3	16JL1967	0.00382 )	( 1536	E 2	24SE1967	0.00273 )	( 1538	E 5	23SE1967	C.00676 )
( 1543	E 5	10CC1967	C.00718 )	( 1386	GS10	12MY1967	0.00862 )	( 1387	GS11	12MY1967	C.02565 )
( 1388	GS12	12MY1967	0.00603 )	( 1389	GS13	12MY1967	0.00516 )	( 1393	GS17	13MY1967	C.00274 )
( 1394	GS18	13MY1967	0.00516 )	( 1397	GS21	13MY1967	C.00065 )	( 1398	GS22	14MY1967	C.00197 )
( 1565	GS13	50C1967	0.01014 )	( 1566	GS14	50C1967	0.00183 )	( 1567	GS15	50C1967	C.00318 )
( 1569	GS17	50C1967	0.00892 )	( 1570	GS18	50C1967	0.00992 )	( 1573	GS21	60C1967	0.00224 )
( 1574	GS22	60C1967	2.21481 )	( 1575	GS28	60C1967	0.00387 )	( 1546	LU 1	20C1967	C.00550 )
( 1521	SH 1	18SE1967	0.00577 )	( 1526	MO 1	20SE1967	C.36980 )	( 1527	TR 1	20SE1967	C.58451 )
( 1528	SB 1	20SE1967	0.18770 )	( 1529	KW 1	20SE1967	0.38374 )	( 1552	SM 1	60C1967	0.37636 )
( 1550	MR 1	50C1967	0.08673 )	( 1553	SG 1	60C1967	0.10282 )	( 1426	PS 2	29MY1967	C.01050 )
( 1350	BH 2	19AP1967	0.00661 )	( 1399	PW 2	5MY1967	0.08161 )	( 1401	PD 2	6MY1967	C.33514 )
( 1402	TR 2	6MY1967	0.22742 )	( 1400	SB 2	6MY1967	C.14892 )	( 1352	KW 2	21AP1967	C.03436 )
( 1404	MO 2	10MY1967	0.08892 )	( 1407	SM 2	14MY1967	0.20302 )	( 1349	CI 2	19AP1967	C.01078 )
( 1422	GA 2	23MY1967	0.01022 )	( 1423	WA 2	25MY1967	C.00856 )				

*Fragilaria leptostauron* var. *dubia* (Grun.) Hust.

*Fragilaria harrisonii* var. *dubia* Grunow, Verh. Zool.-Bot. Ges. Wien, 12:368, pl. 7, figs. 8a-d. 1862.

*Fragilaria leptostauron* var. *dubia* (Grun.) Hustedt in: Rabenhorst, Kryptog.-Fl. Deutschland, 7(2)1:154, figs. 668h-i. 1931.

The valves of this entity lack the strongly expanded central portion of the nominate variety and are rhombic-lanceolate to elliptic-lanceolate in outline. Other features as in the nominate variety.

258 FRLEPTVD TOT AC CF STATIONS 5											
( 1270	F 1	10AU1964	0.00272 )	( 1569	GS17	50C1967	0.00149 )	( 1571	GS19	60C1967	0.00117 )
( 1550	MR 1	50C1967	0.08673 )	( 1426	MS 2	29MY1967	0.02100 )	(			

  

260 FRLEPTVR TOT AC CF STATIONS 2											
( 1341	A 3	19AP1967	0.00108 )	( 1552	SM 1	60C1967	0.00660 )	(			

*Fragilaria leptostauron* var. *fossilis* (Pant.) Řeháková

*Staurosira harrisonii* var. *fossilis* Pantocsek, Foss. Bacill. Ungarns, Vol. 3, p. 95, pl. 5, fig. 77. 1905.

*Fragilaria leptostauron* var. *fossilis* (Pant.) Řeháková, Rozpr. Ustřed. Ust. geol. Československa, 32:37, pl. 11, figs. 17-18. 1965.

The valves of this entity are considerably elongated in the apical axis and less strongly expanded in the mid portion of the valve than the nominate variety. The striae are somewhat shortened and a broad, lanceolate, structureless area occupies the axis of the valves. The maximum size of this variety exceeds that of the nominate variety, specimens in our material reaching 45µ in length. Structure and direction of the striae essentially similar to the nominate variety.

259 FRLEPTVF TOT AC CF STATIONS 5											
( 1567	GS15	50C1967	0.00159 )	( 1571	GS19	60C1967	0.00059 )	( 1426	MS 2	29MY1967	0.02100 )
( 1354	GH 2	25AP1967	0.00679 )	( 1404	MG 2	10MY1967	0.01270 )	(			

*Fragilaria pinnata* Ehr.

*Fragilaria pinnata* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:415, pl. 3(6), fig. 8. 1843.

Cells in girdle view elongate-rectangular to square, attached by the valve faces into band-shaped colonies. Colony formation variable sometimes consisting of only a few cells. Valves variable in outline, linear-elliptic to elliptic, in the smaller individuals nearly circular. Specimens from Lake Michigan 5-30µ long, 2-6µ broad. Striae coarse, chambered, 8-11 in 10µ, distinctly cross lineate. Axial area narrow, linear to very slightly lanceolate. No specially demarcated central area is present.

This species is scattered in collections taken in nearshore areas in Lake Michigan. Occasional valves are noted in collections from offshore areas, especially in the fall months.

262 FRPINNAT TOT AC CF STATIONS 191											
( 60973	CH	1876	1.60605 )	( 3540	CH	11MY1875	0.06989 )	( 3541	CH	1FE1881	0.06847 )
( 3507	CH	19FE1881	0.01132 )	( 46921	CH	23NO1945	0.00517 )	( 46917	CH	12JA1946	0.01663 )
( 46915	CH	20FE1946	0.17641 )	( 46514	CH	19AP1946	0.02883 )	( 46924	CH	10MY1946	0.05714 )
( 46923	CH	22NO1946	0.11147 )	( 46520	CH	20DE1946	0.06655 )	( 46905	CH	JA1947	0.13605 )
( 46905	CH	MR1947	0.07286 )	( 46516	CH	4MY1947	0.01561 )	( 46906	CH	MY1947	0.10022 )
( 46919	CH	5JN1947	0.10925 )	( 46507	CH	JL1947	0.05375 )	( 46922	CH	21AU1947	0.03926 )
( 46758	EV	5JN1937	0.59910 )	( 46771	EV	11JN1937	0.00238 )	( 46743	EV	20JN1937	0.23979 )
( 46764	EV	17JL1937	0.34649 )	( 46757	EV	25JL1937	0.23109 )	( 46747	EV	1AU1937	0.34656 )
( 46763	EV	23AU1937	0.48701 )	( 46752	EV	15SE1937	1.52373 )	( 46760	EV	22SE1937	0.08863 )
( 46750	EV	24SE1937	0.73997 )	( 46744	EV	60C1937	0.29750 )	( 46748	EV	13CC1937	1.43040 )
( 46767	EV	27OC1937	1.40807 )	( 46749	EV	12MR1938	0.14565 )	( 46768	EV	16MR1938	0.17639 )
( 46762	EV	18MR1938	3.70534 )	( 46751	EV	30MR1938	0.62528 )	( 46756	EV	27AP1938	0.01343 )
( 46759	EV	19MY1938	0.10466 )	( 46761	EV	27MY1938	0.04906 )	( 46766	EV	14DE1938	1.10900 )
( 1226	C 7	16MY1964	0.02664 )	( 1231	E 3	16MY1964	0.00245 )	( 1232	E 5	16MY1964	0.00348 )
( 1235	C 7	16JN1964	0.01412 )	( 1238	D 3	11JN1964	0.00200 )	( 1240	D 6	10JN1964	0.29605 )
( 1243	E 6	13JN1964	0.47607 )	( 1244	F 1	11JN1964	0.00110 )	( 1251	C 7	16JL1964	0.00290 )
( 1255	D 5	15JL1964	0.00513 )	( 1256	E 2	14JL1964	0.00183 )	( 1264	C 1	10AU1964	0.00193 )
( 1267	D 6	18AU1964	0.03026 )	( 1269	E 3	15AU1964	0.00274 )	( 1271	C 7	22SE1964	0.02611 )
( 1272	C 1	10SE1964	0.01642 )	( 1274	D 1	17SE1964	0.00938 )	( 1275	D 2	17SE1964	0.00645 )
( 1276	D 3	18SE1964	0.01118 )	( 1278	D 6	18SE1964	0.00769 )	( 1279	E 1	16SE1964	0.00393 )

( 1282	E 4	16SE1964	0.01108 )	( 1283	E 5	16SE1964	0.01839 )	( 1284	E 6	17SE1964	0.28914 )
( 1285	F 1	15SE1964	0.01747 )	( 1286	F 2	15SE1964	0.01095 )	( 1287	F 3	15SE1964	0.00500 )
( 1289	C 7	14OC1964	0.00440 )	( 1294	D 3	15OC1964	0.00330 )	( 1296	D 5	14OC1964	0.01574 )
( 1297	D 6	14OC1964	0.07997 )	( 1299	E 2	12OC1964	0.00314 )	( 1302	E 5	13OC1964	0.12552 )
( 1303	E 6	13OC1964	0.15672 )	( 1304	F 1	11OC1964	0.00494 )	( 1311	D 1	8NC1964	0.00258 )
( 1316	D 6	9NC1964	0.00756 )	( 1318	E 2	7NC1964	0.00190 )	( 1320	E 4	7NC1964	0.00207 )
( 1321	E 5	7NC1964	0.00638 )	( 1322	E 6	7NC1964	0.02999 )	( 1336	C 3	27JA1967	0.00193 )
( 1337	C 3	2MR1967	0.00147 )	( 1338	C 3	2MR1967	0.00264 )	( 1339	C 5	2MR1967	0.00312 )
( 1340	C 7	2MR1967	0.43267 )	( 1341	A 3	19AP1967	0.00542 )	( 1342	A 4	19AP1967	0.00722 )
( 1343	A 6	19AP1967	0.38905 )	( 1345	C 5	25AP1967	0.00195 )	( 1346	C 7	21AP1967	0.00801 )
( 1347	E 2	23AP1967	0.00163 )	( 1348	E 5	23AP1967	0.00960 )	( 1368	A 3	4MY1967	0.00314 )
( 1369	A 4	4MY1967	0.01118 )	( 1370	A 6	3MY1967	0.04143 )	( 1374	E 2	7MY1967	0.00299 )
( 1376	E 5	6MY1967	0.00281 )	( 1408	A 3	23MY1967	0.00447 )	( 1413	C 7	25MY1967	0.00632 )
( 1449	C 3	16JL1967	0.00764 )	( 1452	E 2	14JL1967	0.00639 )	( 1508	C 3	25SE1967	0.00400 )
( 1512	E 3	1SE1967	0.00393 )	( 1532	A 3	18SE1967	0.00329 )	( 1533	A 4	19SE1967	0.01393 )
( 1534	A 6	19SE1967	0.00620 )	( 1536	E 2	24SE1967	0.01909 )	( 1537	E 3	24SE1967	0.01725 )
( 1538	E 5	23SE1967	1.80081 )	( 1541	E 2	11OC1967	0.01064 )	( 1543	E 5	10OC1967	0.12211 )
( 1382	GS 6	10MY1967	0.00278 )	( 1383	GS 7	10MY1967	0.00802 )	( 1384	GS 8	10MY1967	0.01109 )
( 1386	GS10	12MY1967	0.00575 )	( 1387	GS11	12MY1967	0.38419 )	( 1388	GS12	12MY1967	0.01207 )
( 1389	GS13	12MY1967	0.07220 )	( 1390	GS14	12MY1967	0.01762 )	( 1391	GS15	12MY1967	0.01915 )
( 1392	GS16	12MY1967	0.09862 )	( 1393	GS17	13MY1967	0.01644 )	( 1394	GS18	13MY1967	0.02580 )
( 1395	GS19	13MY1967	0.00939 )	( 1396	GS20	13MY1967	0.13762 )	( 1397	GS21	13MY1967	0.00981 )
( 1398	GS22	14MY1967	1.06263 )	( 1554	GS 1	30C1967	0.01779 )	( 1555	GS 2	30C1967	0.00353 )
( 1556	GS 3	30C1967	0.02607 )	( 1557	GS 4	30C1967	0.06353 )	( 1558	GS 5	40C1967	0.30918 )
( 1559	GS 7	40C1967	0.02448 )	( 1560	GS 8	40C1967	0.01417 )	( 1562	GS10	50C1967	0.00493 )
( 1563	GS11	50C1967	0.00701 )	( 1564	GS12	50C1967	0.00329 )	( 1565	GS13	50C1967	0.44620 )
( 1566	GS14	50C1967	0.00917 )	( 1567	GS15	50C1967	0.11114 )	( 1568	GS16	50C1967	0.05195 )
( 1569	GS17	50C1967	0.02676 )	( 1570	GS18	50C1967	0.03967 )	( 1571	GS19	60C1967	0.21893 )
( 1572	GS20	60C1967	0.46326 )	( 1573	GS21	60C1967	0.22398 )	( 1574	GS22	60C1967	0.44981 )
( 1575	GS28	60C1967	0.45157 )	( 1544	MU 1	20C1967	0.00715 )	( 1547	MS 1	20C1967	0.02395 )
( 1524	MI 1	20SE1967	0.08757 )	( 1546	LU 1	20C1967	0.03001 )	( 1520	HO 1	1SE1967	0.43849 )
( 1521	SH 1	18SE1967	0.01154 )	( 1522	BH 1	18SE1967	0.03100 )	( 1523	RA 1	19SE1967	0.01845 )
( 1525	PW 1	20SE1967	0.27851 )	( 1526	MC 1	20SE1967	40.32942 )	( 1527	TR 1	20SE1967	55.67294 )
( 1528	SB 1	20SE1967	13.62980 )	( 1529	KW 1	20SE1967	36.64708 )	( 1530	FR 1	24SE1967	0.20002 )
( 1531	GH 1	25SE1967	0.03381 )	( 1545	WL 1	20C1967	3.89215 )	( 1549	MO 1	40C1967	0.04111 )
( 1551	ES 1	50C1967	0.01598 )	( 1552	SM 1	60C1967	6.97260 )	( 1550	MR 1	50C1967	13.08388 )
( 1553	SG 1	60C1967	3.17274 )	( 1426	MS 2	29MY1967	0.08399 )	( 1351	MI 2	21AP1967	0.10240 )
( 1417	HO 2	22MY1967	0.10842 )	( 1418	SH 2	22MY1967	0.45101 )	( 1350	BH 2	19AP1967	0.24669 )
( 1425	RA 2	25MY1967	0.01768 )	( 1399	PW 2	5MY1967	1.52339 )	( 1401	MO 2	6MY1967	5.03104 )
( 1402	TR 2	6MY1967	8.49036 )	( 1400	SB 2	6MY1967	2.76388 )	( 1352	KW 2	21AP1967	3.29840 )
( 1353	FR 2	23AP1967	0.04219 )	( 1354	GH 2	25AP1967	0.01899 )	( 1404	MO 2	10MY1967	0.60676 )
( 1405	ES 2	12MY1967	0.03225 )	( 1407	SM 2	14MY1967	5.25467 )	( 1349	CI 2	19AP1967	0.17243 )
( 1406	GB 2	13MY1967	0.00270 )	( 1421	CH 2	23MY1967	0.01735 )	( 1422	GA 2	23MY1967	0.02555 )
( 1423	WA 2	25MY1967	0.13703 )	( 1424	KN 2	25MY1967	0.06661 )	(			

*Fragilaria pinnata* var. *intercedens* (Grun.) Hust.

*Fragilaria mutabile* var. *intercedens* Grunow in: Van Heurck, Syn. Diat.

Belgique, pl. 45, fig. 13. 1881.

*Fragilaria pinnata* var. *intercedens* (Grun.) Hustedt in: Rabenhorst,

Kryptog.-Fl. Deutschland, 7(2)2:161. 1931.

Distinguished from the nominate variety by its strictly linear shape, more robust structure and wider axial area. Striae 6-9 in 10 $\mu$ , shorter than in the nominate variety.

The status of this entity is questionable. Its morphology, except for the lack of marginal spines and presence of cross lineation in the striae, is very similar to the linear forms of *F. spinosa* Skv. The relationship between *F. mutabile* (Wm. Smith) Grun., *F. pinnata* Ehr. and their numerous described varieties and Skvortzow's taxon should be critically reexamined.

268 FRSPGOD ICT NC CF STATIONS 33

(46914	CH	19AP1946	0.00107 )	(46520	CH	20DE1946	0.00031 )	(46906	CH	MY1947	0.00066 )
(46907	CH	JL1947	0.00148 )	(46758	EV	5JN1937	0.00713 )	(46764	EV	17JL1937	0.00806 )
(46747	EV	1AU1937	0.00495 )	(46748	EV	13OC1937	0.04270 )	(46767	EV	27OC1937	0.00387 )
(46768	EV	16MR1938	0.01470 )	(46762	EV	18MR1938	0.02206 )	(46751	EV	30MR1938	0.01117 )
( 1284	E 6	17SE1964	0.00318 )	( 1343	A 6	19AP1967	0.00139 )	( 1387	GS11	12MY1967	0.01188 )
( 1388	GS12	12MY1967	0.00603 )	( 1398	GS22	14MY1967	0.00304 )	( 1567	GS15	50C1967	0.00159 )
( 1569	GS17	50C1967	0.00149 )	( 1574	GS22	60C1967	0.04315 )	( 1525	PW 1	20SE1967	0.02785 )
( 1526	MO 1	20SE1967	0.03982 )	( 1527	TR 1	20SE1967	0.05660 )	( 1528	SB 1	20SE1967	0.01444 )
( 1552	SM 1	60C1967	0.00660 )	( 1550	MR 1	50C1967	0.01239 )	( 1351	MI 2	21AP1967	0.00310 )
( 1418	SH 2	22MY1967	0.06221 )	( 1399	PW 2	5MY1967	0.00680 )	( 1401	MO 2	6MY1967	0.03528 )
( 1402	IR 2	6MY1967	0.01624 )	( 1352	KW 2	21AP1967	0.00859 )	( 1407	SM 2	14MY1967	0.01194 )

*Fragilaria pinnata* var. *lancettula* (Schum.) Hust.

*Fragilaria lancettula* Schumann, Schrift. Phys.-Ökon. Ges. Königsberg,  
pl. 1, fig. 4. 1867.

*Fragilaria pinnata* var. *lanceolata* (Schum.) Hustedt in: A. Schmidt, Atlas Diat., pl. 297, figs. 51, 59-64. 1913.

Valves lanceolate with more or less gibbous midportions and protracted, often somewhat unequal ends. Morphology and ornamentation of the frustule essentially similar to the nominate variety.

263 FRPINNVLT TCT NO OF STATIONS 67											
( 16C973	CH	1876	0.07085	( 46S21	CH	23NO1945	C.00129	( 46S17	CH	12JA1946	C.0C028
( 46S23	CH	22NO1946	0.00219	( 46S20	CH	20DE1946	0.00062	( 46S05	CH	JA1947	C.0C245
( 46907	CH	JL1947	C.00049	( 46S22	CH	21AU1947	C.00048	( 1229	D 5	14MY1967	C.0C211
( 1240	D 6	10JN1964	0.01381	( 1243	E 6	13JN1964	0.01462	( 1244	F 1	11JN1964	C.0C110
( 1264	C* 1	1CAU1964	0.00386	( 1272	C* 1	10SE1964	C.00410	( 1278	D 6	18SE1964	C.0C384
( 1297	D 6	14OC1964	0.01142	( 1301	E 4	13OC1964	0.00442	( 1302	E 5	13OC1964	C.0C045
( 1343	A 6	19AP1967	0.00347	( 1536	E 2	24SE1967	0.00273	( 1385	GS 9	10MY1967	C.0C471
( 1387	GS11	12MY1967	0.00792	( 1396	GS20	13MY1967	0.00296	( 1397	GS21	13MY1967	C.0C131
( 1398	GS22	14MY1967	0.00304	( 1554	GS 1	30C1967	0.00356	( 1555	GS 2	30C1967	C.0C353
( 1557	GS 4	3CC1967	0.00374	( 1560	GS 8	40C1967	0.00472	( 1565	GS13	50C1967	C.0C4056
( 1567	GS15	50C1967	0.00159	( 1569	GS17	50C1967	0.00149	( 1570	GS18	50C1967	C.0C992
( 1571	GS19	60C1967	0.00117	( 1572	GS20	60C1967	0.00631	( 1573	GS21	60C1967	C.0C224
( 1574	GS22	60C1967	0.00288	( 1546	LU 1	20C1967	0.01501	( 1520	HO 1	18SE1967	C.0C943
( 1522	BH 1	18SE1967	0.00729	( 1523	RA 1	19SE1967	0.00923	( 1525	FW 1	20SE1967	C.0C835
( 1526	MO 1	20SE1967	1.51903	( 1527	TR 1	20SE1967	8.15094	( 1528	SB 1	20SE1967	C.69304
( 1529	KW 1	20SE1967	2.68617	( 1545	WL 1	20C1967	0.21623	( 1551	ES 1	50C1967	C.0C799
( 1552	SM 1	60C1967	0.13206	( 1550	MR 1	50C1967	0.33453	( 1553	SG 1	60C1967	C.0C3672
( 1426	MS 2	25MY1967	0.02100	( 1351	MI 2	21AP1967	0.00310	( 1417	FO 2	22MY1967	C.0C748
( 1350	BH 2	19AP1967	0.05947	( 1399	PW 2	5MY1967	0.01360	( 1401	MO 2	6MY1967	0.11759
( 1402	TR 2	6MY1967	0.12454	( 1400	SB 2	6MY1967	0.00596	( 1352	KW 2	21AP1967	C.0C013
( 1354	GH 2	25AP1967	0.00518	( 1404	MG 2	10MY1967	0.16514	( 1405	ES 2	12MY1967	C.01290
( 1407	SM 2	14MY1967	0.16719	( 1349	CI 2	15AP1967	0.00359	( 1420	IH 2	23MY1967	C.01511
( 1423	WA 2	25MY1967	0.00856	(							

*Fragilaria spinosa* Skv.

*Fragilaria mutabilis* var. *robusta* Skvortzow and Meyer, Proc. Sungaree River Biol. Station, 1:7, pl. 1, fig. 8. 1928.

*Fragilaria spinosa* Skvortzow, Phillipine J. Sci., 37:307, pl. 1, figs. 13, 27; pl. 4, figs. 13, 19; pl. 5, figs. 54, 59. 1937.

Cells in girdle view elongate-rectangular, attached by the valve faces into band-shaped colonies. Membranous spines arising from the valve margin overlap the adjacent cell. Valves highly variable in outline, linear-elliptic to lanceolate, often more or less gibbous near the center. Specimens from Lake Michigan 25-46 $\mu$  long, 5-8 $\mu$  broad. Striae very coarse, chambered, not extending to the midline of the valve, 5-8 in 10 $\mu$ , without visible substructure. A submarginal spine is visible between each of the striae. Axial area broad, more or less lanceolate, without visible structure. No specially demarcated central area is present.

Our specimens from Lake Michigan are uniformly narrower than those originally described by Skvortzow, length-width ratios being about 1/5-1/6 rather than 1/3.5-1/5 as in the Lake Baikal material. The structure and ornamentation of the frustule in our specimens is essentially identical to the specimens described by Skvortzow.

This species is rare in our collections, and its recorded distribution indicates that it is a member of the periphyton community in relatively deep water.

Coll: 1395.



*Fragilaria vaucheriae* (Kütz.) Peters.

*Exilaria vaucheriae* Kützling, Linnaea, 8:560, pl. 15, fig. 38. 1833.

*Synedra vaucheriae* (Kütz.) Kützling, Bacill., p. 65, pl. 14(4), figs.

1, 2a, 3. 1844.

*Fragilaria vaucheriae* (Kütz.) Peterson, Bot. Not. 1938(1/3):167, figs.

1a-b. 1938.

Cells in girdle view linear, united by the valve faces into band-shaped colonies of variable length. Valves elliptic-lanceolate to lanceolate with more or less protracted, usually rostrate, ends. Specimens from Lake Michigan 8-30 $\mu$  long, 3-4.5 $\mu$  broad. Axial area narrow, central area unilateral, usually noticeably thickened on its margins. Striae distinct, parallel throughout the length of the valve, 14-16 in 10 $\mu$ .

This entity is common in periphyton collections but only occasional specimens are noted in plankton collections from Lake Michigan. In general aspect it resembles *F. intermedia* but is distinguished from that species by its finer striae, less strongly silicified frustule, and the presence of a distinctly thickened border around the central area.

656 SYVAUCHE TCT NO OF STATIONS 149

( 3540	CH	11MY1879	0.00466 )	( 3541	CH	1FE1881	0.00978 )	( 46910	CH	QC1945	C.00437 )
( 46921	CH	23NO1945	0.00259 )	( 46908	CH	DE1945	0.02014 )	( 46917	CH	12JA1946	0.00305 )
( 46915	CH	20FE1946	0.04552 )	( 46914	CH	19AP1946	0.01602 )	( 46924	CH	10MY1946	C.02540 )
( 46923	CH	22NO1946	0.01748 )	( 46920	CH	20DE1946	0.00246 )	( 46909	CH	MR1947	C.02277 )
( 46912	CH	AP1947	0.01150 )	( 46916	CH	4MY1947	0.01221 )	( 46906	CH	MY1947	C.00796 )
( 46919	CH	5JN1947	0.49316 )	( 46907	CH	JL1947	0.00148 )	( 46922	CH	21AU1947	C.00630 )
( 46758	EV	5JN1937	8.18772 )	( 46771	EV	11JN1937	0.01189 )	( 46743	EV	20JN1937	C.4C250 )
( 46745	EV	3JL1937	0.06270 )	( 46770	EV	9JL1937	1.10925 )	( 46764	EV	17JL1937	2.11120 )
( 46757	EV	25JL1937	0.58736 )	( 46747	EV	1AU1937	C.46043 )	( 46763	EV	23AU1937	4.18019 )
( 46765	EV	30AU1937	0.02789 )	( 46752	EV	15SE1937	0.23944 )	( 46760	EV	22SE1937	C.10340 )
( 46750	EV	24SE1937	0.29222 )	( 46748	EV	13OC1937	0.10675 )	( 46767	EV	27OC1937	0.05029 )
( 46768	EV	16MR1938	0.07350 )	( 46762	EV	18MR1938	0.24261 )	( 46756	EV	27AP1938	C.00336 )
( 46759	EV	19MY1938	0.02026 )	( 46761	EV	27MY1938	0.00818 )	( 46766	EV	14DE1938	0.07921 )
( 1236	C* 1	8JN1964	0.00175 )	( 1237	C* 2	8JN1964	0.00258 )	( 1240	D 6	10JN1964	C.00460 )
( 1246	E 6	13JN1964	0.00626 )	( 1244	F 1	11JN1964	0.01425 )	( 1245	F 2	11JN1964	C.02075 )
( 1246	F 3	11JN1964	0.01793 )	( 1252	C* 1	16JL1964	0.00279 )	( 1255	D 5	15JL1964	C.00513 )
( 1259	F 2	6JL1964	0.00310 )	( 1264	C* 1	10AU1964	0.02124 )	( 1265	C* 2	10AU1964	C.00894 )
( 1266	D 3	18AU1964	0.00351 )	( 1268	E 2	15AU1964	C.00547 )	( 1269	E 3	15AU1964	0.00274 )
( 1270	F 1	10AU1964	0.00272 )	( 1274	D 1	17SE1964	C.00938 )	( 1275	D 2	17SE1964	0.00645 )
( 1279	E 1	16SE1964	0.01178 )	( 1284	E 6	17SE1964	0.00318 )	( 1285	F 1	15SE1964	C.00406 )
( 1298	E 1	12OC1964	0.00539 )	( 1299	E 2	12OC1964	0.00314 )	( 1301	E 4	13OC1964	C.00442 )
( 1304	F 1	11OC1964	0.00247 )	( 1316	D 6	9NO1964	C.00378 )	( 1318	E 2	7NO1964	0.00380 )
( 1319	E 3	7NO1964	0.00262 )	( 1320	E 4	7NO1964	0.00207 )	( 1341	A 3	19AP1967	C.00108 )
( 1343	A 6	19AP1967	0.00208 )	( 1374	E 2	7MY1967	0.00299 )	( 1410	A 6	24MY1967	0.00564 )
( 1432	A 4	13JN1967	0.00255 )	( 1451	C 7	16JL1967	0.00197 )	( 1454	E 5	15JL1967	C.00200 )
( 1508	C 3	25E1967	0.00400 )	( 1511	E 2	1SE1967	0.00307 )	( 1534	A 6	19SE1967	C.00310 )
( 1536	E 2	24SE1967	0.00818 )	( 1537	E 3	24SE1967	C.00431 )	( 1538	E 5	23SE1967	0.00943 )
( 1540	C 5	4OC1967	C.00496 )	( 1541	E 2	11OC1967	0.04790 )	( 1542	E 3	11OC1967	C.03051 )
( 1543	E 5	10OC1967	0.01437 )	( 1379	GS 3	9MY1967	C.00309 )	( 1380	GS 4	9MY1967	C.00168 )
( 1382	GS 6	10MY1967	0.01388 )	( 1384	GS 8	10MY1967	0.00185 )	( 1387	GS11	12MY1967	C.08714 )
( 1392	GS16	12MY1967	0.00308 )	( 1394	GS18	13MY1967	0.01032 )	( 1395	GS19	13MY1967	C.00235 )
( 1396	GS20	13MY1967	0.00148 )	( 1397	GS21	13MY1967	0.00196 )	( 1398	GS22	14MY1967	C.00607 )
( 1554	GS 1	3OC1967	0.02491 )	( 1555	GS 2	3OC1967	0.00706 )	( 1556	GS 3	3OC1967	C.00521 )
( 1557	GS 4	3OC1967	0.02242 )	( 1562	GS10	5OC1967	0.00493 )	( 1565	GS13	5OC1967	C.02535 )
( 1566	GS14	5OC1967	0.00183 )	( 1568	GS16	5OC1967	0.00144 )	( 1569	GS17	5OC1967	C.00149 )
( 1570	GS18	5OC1967	0.01983 )	( 1572	GS20	6OC1967	0.00270 )	( 1573	GS21	6OC1967	0.00112 )
( 1574	GS22	6OC1967	0.07766 )	( 1575	GS28	6OC1967	0.00387 )	( 1544	MU 1	20C1967	C.10246 )
( 1547	MS 1	20C1967	0.09581 )	( 1524	MI 1	20SE1967	0.08757 )	( 1546	LU 1	20C1967	1.28045 )
( 1520	HO 1	18SE1967	0.02829 )	( 1521	SH 1	18SE1967	0.02308 )	( 1522	BH 1	18SE1967	C.00365 )
( 1523	RA 1	19SE1967	0.00923 )	( 1526	MO 1	20SE1967	0.12516 )	( 1527	TR 1	20SE1967	C.30189 )
( 1528	SB 1	20SE1967	0.15882 )	( 1529	KW 1	20SE1967	2.49430 )	( 1530	FR 1	24SE1967	C.33003 )
( 1545	WL 1	20C1967	21.73115 )	( 1548	CA 1	3OC1967	0.01272 )	( 1549	MQ 1	4OC1967	C.04111 )
( 1551	ES 1	5OC1967	0.00799 )	( 1552	SM 1	6OC1967	0.01981 )	( 1550	MR 1	5OC1967	C.35931 )
( 1553	SG 1	6OC1967	0.03672 )	( 1428	MU 2	29MY1967	0.00603 )	( 1427	LU 2	29MY1967	C.03632 )
( 1417	HO 2	22MY1967	0.01495 )	( 1350	BH 2	19AP1967	0.07929 )	( 1425	RA 2	25MY1967	C.00884 )
( 1399	PW 2	5MY1967	0.04081 )	( 1402	TR 2	6MY1967	0.02707 )	( 1400	SB 2	6MY1967	C.02383 )
( 1352	KW 2	21AP1967	0.07731 )	( 1354	GH 2	25AP1967	0.00345 )	( 1429	WL 2	29MY1967	C.04247 )
( 1403	CA 2	10MY1967	2.30156 )	( 1404	MC 2	10MY1967	0.07622 )	( 1405	ES 2	12MY1967	0.03225 )
( 1407	SM 2	14MY1967	0.04777 )	( 1349	CI 2	19AP1967	0.00359 )	( 1406	GB 2	13MY1967	0.02965 )
( 1419	BU 2	23MY1967	0.01831 )	( 1420	IH 2	23MY1967	0.03021 )	(			

*Fragilaria vaucheriae* var. *capitellata* (Grun.) Patr.

*Synedra capitellata* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 40, fig. 26. 1881.

*Synedra vaucheriae* var. *capitellata* (Grun.) Cleve, J. Linnean Soc. London, Bot., 20:314. 1883.

*Fragilaria vaucheriae* var. *capitellata* (Grun.) Patrick, Akad. Nat. Sci. Philadelphia Monogr. 13:121. 1966.

Valves lanceolate with subcapitate to capitate ends. Specimens from Lake Michigan 15-50 $\mu$  long, 3-4 $\mu$  broad. Striae somewhat finer than in the nominate variety, 14-18 in 10 $\mu$ . Other features of morphology and ornamentation of the frustule essentially similar to the nominate variety.

This entity is quite common in plankton collections from Lake Michigan. It is somewhat questionable that forms having a much expanded central area such as illustrated by Patrick (Patrick and Reimer 1966) belong to this taxon.

697 SYVAUCVC TOT NO OF STATICS 39

( 46917 )	CH	12JA1946	0.00028 )	( 46914 )	CH	19AP1946	0.00107 )	( 46923 )	CH	22NO1946	0.00219 )
( 46909 )	CH	MR1947	0.00455 )	( 46912 )	CH	AP1947	0.01150 )	( 46916 )	CH	4MY1947	0.00170 )
( 46758 )	EV	5JN1937	0.93431 )	( 46743 )	EV	20JA1937	0.00856 )	( 46745 )	EV	3JL1937	0.04180 )
( 46747 )	EV	1AU1937	0.00495 )	( 46763 )	EV	23AU1937	0.04058 )	( 46752 )	EV	15SE1937	0.06530 )
( 1244 )	F 1	11JN1964	0.00219 )	( 1258 )	F 1	6JL1964	0.00708 )	( 1259 )	F 2	6JL1964	0.00620 )
( 1260 )	F 3	6JL1964	0.00573 )	( 1279 )	F 1	16SE1964	0.00785 )	( 1281 )	F 3	16SE1964	0.00392 )
( 1285 )	F 1	15SE1964	0.04659 )	( 1297 )	D 6	14OC1964	0.00190 )	( 1510 )	C 7	29AU1967	0.00316 )
( 1511 )	E 2	1SE1967	0.00307 )	( 1379 )	GS 3	9PY1967	0.00619 )	( 1382 )	GS 6	10MY1967	0.00278 )
( 1387 )	GS11	12MY1967	0.01188 )	( 1388 )	GS12	12MY1967	0.00603 )	( 1557 )	GS 4	30C1967	0.00374 )
( 1561 )	GS 9	4OC1967	0.00587 )	( 1563 )	GS11	5OC1967	0.00234 )	( 1565 )	GS13	5OC1967	0.00507 )
( 1567 )	GS15	5OC1967	0.00159 )	( 1574 )	GS22	6OC1967	0.00863 )	( 1546 )	LU 1	20C1967	0.00500 )
( 1526 )	MO 1	20SE1967	0.00565 )	( 1549 )	MO 1	4OC1967	0.01370 )	( 1552 )	SM 1	6OC1967	0.00660 )
( 1550 )	MR 1	5OC1967	0.02478 )	( 1403 )	CA 2	10MY1967	0.32693 )	( 1404 )	MQ 2	10MY1967	0.07622 )

*Fragilaria vaucheriae* var. *truncata* (Grev.)

*Exilaria truncata* Greville, in: Pritchard, Hist. Infus., p. 789. 1861.

*Synedra vaucheriae* var. *truncata* (Grev.) Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 40, fig. 20. 1881.

Valves linear with rostrate to subcapitate apices. Other features of the morphology and ornamentation of the frustule essentially similar to the nominate variety.

This entity is relatively rare in our collections. Previous reports indicate that it finds its primary habitat in the periphyton.

695 SYVALCVT TOT NO OF STATICS 2

( 1265 )	C 2	10AU1964	0.00224 )	( 1341 )	A 3	15AP1967	0.00217 )
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### Species incertae sedis

*Fragilaria* sp. #1.

266 FRSPCOA TOT NO OF STATICS 6

( 1565 )	GS13	5OC1967	0.04563 )	( 1550 )	MR 1	5OC1967	0.06195 )	( 1350 )	BH 2	15AP1967	0.01101 )
( 1354 )	GH 2	25AP1967	0.00173 )	( 1404 )	MQ 2	10MY1967	0.03811 )	( 1420 )	IH 2	23MY1967	0.10574 )

*Fragilaria* sp. #7.

270 FRSPCOG TCT NO OF STATIONS 223											
( 60973 )	CH	1876	0.37789 )	( 3540	CH	11MY1875	0.01864 )	( 3541	CH	1FE1881	0.22498 )
( 46910 )	CH	0C1945	0.00982 )	( 46521	CH	23NO1945	0.25222 )	( 46908	CH	DE1945	0.46324 )
( 46917 )	CH	12JA1546	0.02246 )	( 46515	CH	20FE1946	0.11950 )	( 46914	CH	19AP1546	0.00427 )
( 46924 )	CH	10MY1546	0.02116 )	( 46523	CH	22NO1946	0.07868 )	( 46920	CH	20DE1946	1.24165 )
( 46905 )	CH	JA1947	0.03922 )	( 46509	CH	MR1947	0.05464 )	( 46912	CH	AP1947	0.24146 )
( 46916 )	CH	4MY1947	1.38939 )	( 46506	CH	MY1947	1.16478 )	( 46919	CH	5JN1947	0.01214 )
( 46907 )	CH	JL1947	1.18594 )	( 46513	CH	6AU1947	0.04184 )	( 46922	CH	21AU1947	0.50403 )
( 46771 )	EV	11JN1937	0.01426 )	( 46743	EV	20JN1937	0.59947 )	( 46745	EV	3JL1937	0.04180 )
( 46770 )	EV	9JL1937	0.27433 )	( 46764	EV	17JL1937	0.05641 )	( 46757	EV	25JL1937	0.01444 )
( 46747 )	EV	1AU1937	0.01238 )	( 46763	EV	23AU1937	0.87256 )	( 46765	EV	30AU1937	0.00558 )
( 46769 )	EV	7SE1937	0.02171 )	( 46760	EV	22SE1937	0.01477 )	( 46744	EV	6OC1937	0.00488 )
( 46767 )	EV	27OC1937	0.00774 )	( 46749	EV	12MR1938	0.02427 )	( 46768	EV	16MR1938	0.00580 )
( 46762 )	EV	18MR1938	0.08822 )	( 46751	EV	30MR1938	0.02233 )	( 46756	EV	27AP1938	0.00504 )
( 46761 )	EV	27MY1938	0.00818 )	( 46766	EV	14DE1938	0.03169 )	( 1435	B 6	5JN1964	0.02198 )
( 1440	B 6	11JL1964	0.13266 )	( 1441	B 6	24JL1964	0.03965 )	( 1250	C 6	10JL1964	0.25899 )
( 1251	C 7	16JL1964	0.01159 )	( 1252	C* 1	16JL1964	0.10042 )	( 1253	C* 2	16JL1964	0.00913 )
( 1254	D 2	15JL1964	0.01532 )	( 1255	D 5	15JL1964	0.09753 )	( 1256	E 2	14JL1964	0.01649 )
( 1257	E 3	14JL1964	0.04307 )	( 1258	F 1	6JL1964	0.33037 )	( 1259	F 2	6JL1964	0.39353 )
( 1260	F 3	6JL1964	2.00546 )	( 1442	B 6	2AU1964	1.43296 )	( 1443	B 6	16AU1964	1.79892 )
( 1444	B 6	19SE1964	0.04244 )	( 1271	C 7	22SE1964	0.00653 )	( 1272	C* 1	10SE1964	0.30374 )
( 1273	C* 2	10SE1964	0.26883 )	( 1274	D 1	17SE1964	0.50673 )	( 1275	D 2	17SE1964	0.90317 )
( 1276	D 3	18SE1964	0.04470 )	( 1277	D 4	18SE1964	0.08675 )	( 1278	D 6	18SE1964	0.02690 )
( 1279	E 1	16SE1964	0.07068 )	( 1280	E 2	16SE1964	0.30635 )	( 1281	E 3	16SE1964	3.02162 )
( 1282	E 4	16SE1964	0.58726 )	( 1283	E 5	16SE1964	0.66201 )	( 1284	E 6	17SE1964	0.25736 )
( 1285	F 1	15SE1964	0.54743 )	( 1286	F 2	15SE1964	0.18608 )	( 1287	F 3	15SE1964	0.59548 )
( 1445	B 6	14OC1964	0.00978 )	( 1293	C 2	15OC1964	0.01415 )	( 1296	D 5	14OC1964	0.00787 )
( 1297	D 6	14OC1964	0.00762 )	( 1300	E 3	13OC1964	0.00716 )	( 1304	F 1	11OC1964	0.00988 )
( 1305	F 2	11OC1964	0.00518 )	( 1306	F 3	11OC1964	0.01109 )	( 1308	C 7	6NO1964	0.00912 )
( 1310	C* 2	10NO1964	0.00227 )	( 1311	D 1	8NO1964	0.00774 )	( 1312	D 2	8NO1964	0.00310 )
( 1317	E 1	6NO1964	0.00383 )	( 1318	E 2	7NO1964	0.66587 )	( 1319	E 3	7NO1964	0.00524 )
( 1320	E 4	7NO1964	0.01241 )	( 1321	E 5	7NO1964	0.02554 )	( 1322	E 6	7NO1964	0.02000 )
( 1323	F 1	6NO1964	0.32613 )	( 1324	F 2	6NO1964	0.09783 )	( 1336	C 3	27JA1967	0.01348 )
( 1337	C 3	2MR1967	0.00882 )	( 1338	C 3	28MR1967	0.00264 )	( 1339	C 5	28MR1967	0.01247 )
( 1340	C 7	28MR1967	0.00291 )	( 1341	A 3	19AP1967	0.00434 )	( 1342	A 4	19AP1967	0.02707 )
( 1343	A 6	19AP1967	0.00417 )	( 1344	C 3	25AP1967	0.00331 )	( 1345	C 5	25AP1967	0.00585 )
( 1346	C 7	21AP1967	0.00534 )	( 1347	E 2	23AP1967	0.00813 )	( 1348	E 5	23AP1967	0.01508 )
( 1368	A 3	4MY1967	0.01571 )	( 1369	A 4	4MY1967	0.00373 )	( 1370	A 6	3MY1967	0.03222 )
( 1371	C 3	4MY1967	0.00693 )	( 1372	C 5	5MY1967	0.00709 )	( 1373	C 7	5MY1967	0.00285 )
( 1374	E 2	7MY1967	0.02092 )	( 1375	E 3	7MY1967	0.01203 )	( 1376	E 5	6MY1967	0.03935 )
( 1408	A 3	23MY1967	0.02683 )	( 1409	A 4	23MY1967	0.04463 )	( 1410	A 6	24MY1967	0.07894 )
( 1411	C 3	31MY1967	0.01641 )	( 1412	C 5	31MY1967	0.02105 )	( 1413	C 7	25MY1967	0.01264 )
( 1414	E 2	28MY1967	0.01679 )	( 1415	E 3	28MY1967	0.01124 )	( 1416	E 5	28MY1967	0.01093 )
( 1431	A 3	12JN1967	0.03605 )	( 1432	A 4	13JN1967	0.28609 )	( 1433	C 3	17JN1967	0.01938 )
( 1434	C 5	17JN1967	0.00299 )	( 1435	C 7	13JN1967	0.01579 )	( 1436	E 2	15JN1967	0.00724 )
( 1437	E 3	15JN1967	0.00269 )	( 1438	E 5	14JN1967	0.00726 )	( 1446	A 3	11JL1967	0.00978 )
( 1447	A 4	11JL1967	0.57307 )	( 1448	A 6	10JL1967	0.00354 )	( 1449	C 3	16JL1967	0.02675 )
( 1450	C 5	16JL1967	0.66648 )	( 1452	E 2	14JL1967	0.01064 )	( 1454	E 5	15JL1967	0.28006 )
( 1505	A 4	28AU1967	0.15582 )	( 1506	A 6	29AU1967	0.01569 )	( 1508	C 3	25E1967	0.07194 )
( 1509	C 5	25E1967	1.15070 )	( 1510	C 7	29AU1967	0.04110 )	( 1511	E 2	15E1967	0.04604 )
( 1512	E 3	15E1967	0.13743 )	( 1513	E 5	31AU1967	0.10135 )	( 1532	A 3	18SE1967	0.08213 )
( 1533	A 4	19SE1967	0.13462 )	( 1534	A 6	19SE1967	0.00310 )	( 1535	C 7	20SE1967	0.01288 )
( 1536	E 2	24SE1967	0.20178 )	( 1537	E 3	24SE1967	0.06038 )	( 1538	E 5	23SE1967	0.01657 )
( 1539	C 3	4OC1967	0.00503 )	( 1540	C 5	4OC1967	0.01985 )	( 1541	E 2	11OC1967	0.04257 )
( 1542	E 3	11OC1967	0.04068 )	( 1543	E 5	10OC1967	0.04310 )	( 1377	GS 1	9MY1967	0.00792 )
( 1379	GS 3	9MY1967	0.01547 )	( 1380	GS 4	9MY1967	0.00841 )	( 1381	GS 5	10MY1967	0.01431 )
( 1382	GS 6	10MY1967	0.00555 )	( 1386	GS10	12MY1967	0.00287 )	( 1387	GS11	12MY1967	0.00792 )
( 1389	GS13	12MY1967	0.00516 )	( 1390	GS14	12MY1967	0.01174 )	( 1391	GS15	12MY1967	0.00598 )
( 1392	GS16	12MY1967	0.00616 )	( 1393	GS17	13MY1967	0.01096 )	( 1394	GS18	13MY1967	0.00344 )
( 1398	GS22	14MY1967	0.01214 )	( 1554	GS 1	30C1967	0.03202 )	( 1555	GS 2	30C1967	0.06356 )
( 1556	GS 3	30C1967	0.07822 )	( 1557	GS 4	30C1967	0.28774 )	( 1558	GS 5	40C1967	0.20612 )
( 1559	GS 7	40C1967	0.30776 )	( 1560	GS 8	40C1967	0.07084 )	( 1561	GS 9	40C1967	0.08804 )
( 1562	GS10	50C1967	0.29358 )	( 1563	GS11	50C1967	0.00935 )	( 1564	GS12	50C1967	0.15965 )
( 1566	GS14	50C1967	0.00734 )	( 1567	GS15	50C1967	0.04922 )	( 1568	GS16	50C1967	0.03896 )
( 1569	GS17	50C1967	0.08770 )	( 1570	GS18	50C1967	0.02975 )	( 1571	GS19	60C1967	0.00176 )
( 1573	GS21	60C1967	0.01008 )	( 1574	GS22	60C1967	0.02301 )	( 1547	MS 1	20C1967	0.54291 )
( 1546	LU 1	20C1967	0.01501 )	( 1521	SH 1	18SE1967	0.01731 )	( 1526	MO 1	20SE1967	0.01707 )
( 1528	SB 1	20SE1967	0.05775 )	( 1529	Kw 1	20SE1967	0.02398 )	( 1548	CA 1	30C1967	1.60285 )
( 1549	MQ 1	40C1967	0.12334 )	( 1551	ES 1	50C1967	0.45531 )	( 1550	PR 1	50C1967	0.01239 )
( 1426	MS 2	29MY1967	0.02100 )	( 1417	HO 2	22MY1967	0.00748 )	( 1425	RA 2	25MY1967	0.01768 )
( 1399	PW 2	5MY1967	0.29244 )	( 1401	MO 2	6MY1967	0.04704 )	( 1402	TR 2	6MY1967	0.02166 )
( 1400	SB 2	6MY1967	0.37527 )	( 1352	Kw 2	21AP1967	0.21474 )	( 1354	GH 2	25AP1967	0.00690 )
( 1403	CA 2	10MY1967	1.21616 )	( 1404	MC 2	10MY1967	0.06352 )	( 1405	ES 2	12MY1967	0.01290 )
( 1407	SM 2	14MY1967	0.01194 )	( 1349	CI 2	19AP1967	0.02155 )	( 1419	BU 2	23MY1967	0.07323 )
( 1420	IH 2	23MY1967	0.09063 )	( 1421	CH 2	23MY1967	0.08675 )	( 1422	GA 2	23MY1967	0.01533 )
( 1424	KN 2	25MY1967	0.06661 )								

*Fragilaria* sp. #8 (*F. crotonensis* erstlingzellen ?).

271 FRSPCOH TCT NO OF STATIONS 28											
( 60973 )	CH	1876	0.30704 )	( 46513	CH	6AU1947	0.01046 )	( 46771	EV	11JN1937	0.00238 )
( 46770 )	EV	9JL1937	0.02385 )	( 46764	EV	17JL1937	0.04835 )	( 46757	EV	25JL1937	0.00481 )
( 46747 )	EV	1AU1937	0.00742 )	( 46750	EV	24SE1937	0.00471 )	( 46744	EV	6OC1937	0.00488 )
( 46767 )	EV	27OC1937	0.00774 )	( 46761	EV	27MY1938	0.00273 )	( 46766	EV	14DE1938	0.03169 )
( 1260	F 3	6JL1964	0.00191 )	( 1443	B 6	16AU1964	0.00198 )	( 1270	F 1	10AU1964	0.00817 )
( 1306	F 1	11OC1964	0.22474 )	( 1305	F 2	11OC1964	0.02243 )	( 1306	F 3	11OC1964	0.01109 )
( 1315	D 5	9NO1964	0.00455 )	( 1316	C 6	9NO1964	0.01133 )	( 1318	E 2	7NO1964	0.00380 )
( 1323	F 1	6NO1964	0.24390 )	( 1324	F 2	6NO1964	0.19332 )	( 1325	F 3	6NO1964	0.23678 )
( 1451	C 7	16JL1967	0.03937 )	( 1383	GS 7	10MY1967	0.00267 )	( 1387	GS11	12MY1967	0.00396 )
( 1423	WA 2	25MY1967	0.00428 )								

*Fragilaria* sp. #9.

272 FRSPECQI TCT NO OF STATIONS 15

(46915	CH	20FE1946	0.01138 )	(46516	CH	4MY1947	0.00271 )	(46919	CH	5JN1947	C.00455 )
(46743	EV	20JN1937	0.00856 )	(46757	EV	25JL1937	0.00481 )	(46763	EV	23NO1945	C.02029 )
(46752	EV	15SE1937	0.02177 )	( 1258	F 1	6JL1964	0.03540 )	( 1259	F 2	6JL1964	C.02479 )
( 1260	F 3	6JL1964	0.00573 )	( 1272	C* 1	10SE1964	0.00410 )	( 1284	E 6	17SE1964	C.00635 )
( 1285	F 1	15SE1964	C.09900 )	( 1452	E 2	14JL1967	C.00639 )	( 1558	GS 5	40C1967	C.00793 )

*Fragilaria* sp. #10.

273 FRSPECQI TCT NO OF STATIONS 10

(46924	CH	10MY1946	0.00071 )	(46516	CH	4MY1947	0.00136 )	(46919	CH	5JN1947	C.00910 )
(46922	CH	21AU1947	0.00048 )	(46743	EV	20JN1937	0.00428 )	(46757	EV	25JL1937	C.00481 )
( 1259	F 2	6JL1964	C.00930 )	( 1285	F 1	15SE1964	0.01165 )	( 1403	CA 2	10MY1967	C.45693 )
( 1404	MO 2	10MY1967	0.02541 )	(							

*Fragilaria* sp. #11.

274 FRSPECCK TCT NO OF STATIONS 4

(46909	CH	MR1947	0.00455 )	(46516	CH	4MY1947	0.00204 )	( 1449	C 3	16JL1967	C.00382 )
( 1530	FR 1	24SE1967	0.01000 )	(							

*Fragilaria* sp. #15.

275 FRSPECQI TCT NO OF STATIONS 1

( 1406	GB 2	13MY1967	0.00270 )	(							
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*Fragilaria "crotonensis v. tenuissima."*

249 FRCROTVA TCT NO OF STATIONS 136

(60973	CH	1876	0.56684 )	( 3540	CH	11MY1875	0.04659 )	( 3541	CH	1FE1881	0.02935 )
( 3507	CH	19FE1881	0.06792 )	(46510	CH	GC1945	0.10159 )	(46921	CH	23NO1945	C.02457 )
(46908	CH	DE1945	0.02014 )	(46517	CH	12JL1946	0.04491 )	(46915	CH	20FE1946	C.10812 )
(46914	CH	19AP1946	0.00747 )	(46524	CH	10MY1946	0.22927 )	(46920	CH	20DE1946	C.24032 )
(46905	CH	JA1947	0.15993 )	(46909	CH	MR1947	C.01821 )	(46912	CH	AP1947	C.52892 )
(46916	CH	4MY1947	0.02613 )	(46506	CH	MY1947	C.01062 )	(46907	CH	JL1947	C.19231 )
(46913	CH	6AU1947	0.09413 )	(46922	CH	21AU1947	0.02423 )	(46758	EV	5JN1937	C.09628 )
(46771	EV	11JN1937	0.12125 )	(46743	EV	20JN1937	0.16271 )	(46745	EV	3JL1937	C.12539 )
(46770	EV	9JL1937	0.30415 )	(46764	EV	17JL1937	C.37067 )	(46757	EV	25JL1937	C.13480 )
(46747	EV	1AU1937	0.34656 )	(46763	EV	23AU1937	C.52760 )	(46765	EV	30AU1937	C.10039 )
(46769	EV	7SE1937	0.04342 )	(46752	EV	15SE1937	0.08707 )	(46760	EV	22SE1937	C.43331 )
(46750	EV	24SE1937	0.41476 )	(46744	EV	6OC1937	0.88763 )	(46748	EV	13OC1937	C.08540 )
(46767	EV	27OC1937	0.36362 )	(46749	EV	12MR1938	0.32771 )	(46768	EV	16MR1938	C.10290 )
(46762	EV	18MR1938	0.77195 )	(46751	EV	30MR1938	C.04466 )	(46772	EV	18AP1938	C.04568 )
(46756	EV	27AP1938	0.03022 )	(46759	EV	19MY1938	C.05402 )	(46761	EV	27MY1938	C.05451 )
(46766	EV	14OE1938	0.22180 )	( 1377	GS 1	5MY1967	0.01187 )	( 1378	GS 2	9MY1967	0.00841 )
( 1379	GS 3	9MY1967	0.13927 )	( 1380	GS 4	9MY1967	0.17152 )	( 1381	GS 5	10MY1967	C.09302 )
( 1382	GS 6	10MY1967	0.01665 )	( 1383	GS 7	10MY1967	0.08287 )	( 1384	GS 8	10MY1967	C.02033 )
( 1385	GS 9	10MY1967	0.01413 )	( 1386	GS10	12MY1967	0.03160 )	( 1387	GS11	12MY1967	C.15447 )
( 1388	GS12	12MY1967	0.04223 )	( 1390	GS14	12MY1967	0.05285 )	( 1391	GS15	12MY1967	C.02394 )
( 1392	GS16	12MY1967	0.18183 )	( 1393	GS17	13MY1967	0.05479 )	( 1394	GS18	13MY1967	C.12729 )
( 1395	GS19	13MY1967	0.08690 )	( 1396	GS20	13MY1967	0.01258 )	( 1397	GS21	13MY1967	C.00392 )
( 1398	GS22	14MY1967	0.15788 )	( 1554	GS 1	30C1967	C.99623 )	( 1555	GS 2	30C1967	C.06003 )
( 1556	GS 3	30C1967	0.18772 )	( 1557	GS 4	30C1967	C.97160 )	( 1558	GS 5	40C1967	C.73728 )
( 1559	GS 7	40C1967	0.41617 )	( 1560	GS 8	40C1967	C.17003 )	( 1561	GS 9	40C1967	C.21130 )
( 1562	GS10	50C1967	0.26644 )	( 1563	GS11	50C1967	0.14497 )	( 1564	GS12	50C1967	C.14484 )
( 1566	GS14	50C1967	0.05687 )	( 1567	GS15	50C1967	0.12384 )	( 1568	GS16	50C1967	C.15584 )
( 1569	GS17	50C1967	0.27054 )	( 1570	GS18	50C1967	C.69417 )	( 1571	GS19	60C1967	C.03278 )
( 1572	GS20	60C1967	0.03064 )	( 1573	GS21	60C1967	0.14223 )	( 1574	GS22	60C1967	C.12944 )
( 1575	GS28	60C1967	0.02709 )	( 1544	MU 1	20C1967	0.04766 )	( 1547	PS 1	20C1967	C.41517 )
( 1524	MI 1	20SE1967	0.94133 )	( 1546	LU 1	20C1967	0.04001 )	( 1520	HO 1	18SE1967	C.39606 )
( 1521	SH 1	18SE1967	2.21555 )	( 1522	BH 1	18SE1967	0.00912 )	( 1523	RA 1	19SE1967	2.06642 )
( 1525	PW 1	20SE1967	0.79376 )	( 1526	MO 1	20SE1967	0.32429 )	( 1527	TR 1	20SE1967	C.07547 )
( 1528	SB 1	20SE1967	0.46203 )	( 1529	KW 1	20SE1967	0.34776 )	( 1530	FR 1	24SE1967	C.15001 )
( 1531	GH 1	25SE1967	0.02536 )	( 1545	WL 1	20C1967	0.14866 )	( 1548	CA 1	30C1967	C.11449 )
( 1549	MO 1	40C1967	0.10963 )	( 1551	ES 1	50C1967	0.45531 )	( 1550	MR 1	50C1967	C.06195 )
( 1553	SG 1	60C1967	0.13220 )	( 1428	MU 2	29MY1967	0.03917 )	( 1426	PS 2	29MY1967	0.07349 )
( 1351	MI 2	21AP1967	0.01552 )	( 1427	LU 2	29MY1967	0.01211 )	( 1417	HO 2	22MY1967	C.05982 )
( 1418	SH 2	22MY1967	0.31104 )	( 1425	RA 2	25MY1967	0.45973 )	( 1399	PW 2	5MY1967	C.06121 )
( 1401	MO 2	6MY1967	0.07056 )	( 1402	TR 2	6MY1967	C.18952 )	( 1400	SB 2	6MY1967	C.05361 )
( 1352	KW 2	21AP1967	0.30064 )	( 1353	FR 2	23AP1967	0.02110 )	( 1354	GH 2	25AP1967	C.01036 )
( 1429	MI 2	29MY1967	0.06370 )	( 1403	CA 2	10MY1967	0.06539 )	( 1404	PG 2	10MY1967	C.03811 )
( 1405	ES 2	12MY1967	0.14190 )	( 1407	SM 2	14MY1967	0.14331 )	( 1349	CI 2	19AP1967	C.06825 )
( 1406	GB 2	13MY1967	0.02157 )	( 1419	BU 2	23MY1967	C.12816 )	( 1421	CH 2	23MY1967	C.08675 )
( 1422	GA 2	23MY1967	0.10218 )	( 1423	WA 2	25MY1967	0.50529 )	( 1424	KN 2	25MY1967	C.37303 )
( 1430	MC 2	12JN1967	0.02467 )	(							

Genus *Frustulia* Rabh. (nom. cons. non Agardh 1824)  
Rabenhorst, Süßw.-Diat., p. 50. 1853.

Most members of the genus *Frustulia* find their primary habitat in benthic communities. The occasional specimens that are noted in plankton collections from Lake Michigan are probably derived from such habitats.

*Frustulia rhomboides* (Ehr.) De Toni

*Navicula rhomboides* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:419, pl. 3(1), fig. 15. 1843.

*Frustulia rhomboides* (Ehr.) De Toni, Syll. Alg. Vol. 2, Sect. 1, p. 277. 1891.

276 FURHOMB TCT NO OF STATIONS 2									
146906	CH	MY1947	0.00066 )	146907	CH	JL1947	C.00049 )	(	

*Frustulia rhomboides* var. *amphipleuroides* (Grun.) Cleve

*Navicula rhomboides* var. *amphipleuroides* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):47, pl. 3, fig. 59. 1880.

*Frustulia rhomboides* var. *amphipleuroides* (Grun.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):123. 1894.

277 FURHOMVA TCT NO OF STATIONS 10									
160973	CH	1876	0.02362 )	13541	CH	1FE1881	C.00578 )	146921	CH
146924	CH	10MY1946	0.00071 )	146923	CH	22NO1946	0.00437 )	146920	CH
146919	CH	5JN1947	0.10925 )	1388	GS12	12MY1967	0.00603 )	1569	GS17
1550	MR 1	5CC1967	0.01239 )					50C1967	C.00149 )

*Frustulia rhomboides* var. *saxonica* (Rabh.) De Toni

*Frustulia saxonica* Rabenhorst, Süssw.-Diat., p. 50, pl. 7, fig. 1. 1853.

*Frustulia rhomboides* var. *saxonica* (Rabh.) De Toni, Syll. Alg., Vol. 2, Sect. 1, p. 277. 1891.

278 FURHOMVS TCT NO OF STATIONS 2									
13540	CH	11MY1879	0.00466 )	1254	C 2	15JL1964	C.00192 )	(	

*Frustulia vulgaris* (Thw.) De Toni

*Schizonema vulgare* Thwaites, Annals Mag. Nat. Hist., Ser. 2, 1:170, pl. 12(H), fig. 1-5. 1848.

*Frustulia vulgaris* (Thw.) De Toni, Syll. Alg., Vol. 2, Sect. 1, p. 280. 1891.

279 FUVULGAR TCT NO OF STATIONS 5									
146748	EV	13CC1937	0.02135 )	1285	F 1	15SE1964	0.00582 )	1341	A 3
1431	A 3	12JN1967	0.00257 )	1350	BH 2	19AP1967	0.00220 )		19AP1967 C.1C325 )

*Frustulia weinholdii* Hust.

*Frustulia weinholdii* Hustedt in: Rabenhorst, Kryptog.-Fl. Deutschlands, Vol. 7(2)5:731, fig. 1101. 1937.

280 FUWEINH TCT NO OF STATIONS 1									
146919	CH	5JN1947	0.00152 )	(					

Genus *Gomphoneis* Cleve

Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):73. 1894.

The members of the genus *Gomphoneis* noted in our collections are dominant entities in periphyton communities in many areas of the upper Great Lakes. The occasional specimens noted in our collections are undoubtedly derived from such habitats.

*Gomphoneis erienne* (Grun.) Skv.

*Gomphonema erienne* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 23, fig. 10. 1880.

*Gomphoneis erienne* (Grun.) Skvortzow, Proc. Sungaree River Biol. Sta., 1(5):28. 1928.

281 GSERIENS TOT NO OF STATIONS 1  
( 1406 GB 2 13MY1967 0.00270 ) (

*Gomphoneis herculeanum* (Ehr.) Cleve

*Gomphonema herculeanum* Ehrenberg, Ber. Akad. Wiss. Berlin, 1845:78. 1845.

*Gomphoneis herculeanum* (Ehr.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):73. 1894.

282 GSHERCUL TOT NO OF STATIONS 1  
( 146770 EV 9JUL1937 0.00596 ) (

Genus *Gomphonema* Agardh  
Agardh, Syst. Alg., p. 15. 1824.

Most members of the genus *Gomphonema* find their primary habitat in periphyton communities. A relatively small proportion of the species occurring in such habitats in Lake Michigan are also taken in plankton collections.

*Gomphonema abbreviatum* Kütz.

*Gomphonema abbreviatum* Kütz., Bacill., p. 84, pl. 8, figs. 5-6. 1844.

283 GCABBREV TOT NO OF STATIONS 2  
( 146921 CH 23NOV1945 0.00065 ) ( 1236 C\* 1 8JUN1964 0.00175 ) (

*Gomphonema abbreviatum* var. *inflata* Hust.

*Gomphonema abbreviatum* var. *inflata* Hustedt, Arch. Hydrobiol., 47(4):630, fig. 21. 1953.

Coll: 1550.

*Gomphonema acuminatum* var. *brebissonii* (Kütz.) Grun.

*Gomphonema brebissonii* Kütz., Sp. Alg., p. 66. 1849.

*Gomphonema acuminatum* var. *brebissonii* (Kütz.) Grunow in: Syn. Diat. Belgique, pl. 23, figs. 23-26. 1880.

284 GCACUMIN TOT NO OF STATIONS 1  
( 1354 GH 2 25AP1967 0.00173 ) (

*Gomphonema acuminatum* var. *coronata* (Ehr.) Rabh.

*Gomphonema coronatum* Ehrenberg, Ber. Akad. Wiss. Berlin, 1840:17. 1841.

*Gomphonema acuminatum* var. *coronata* (Ehr.) Rabenhorst, Fl. Europaea Alg., Sect. I, p. 124. 1864.

285 GOACUMVC TOT NO OF STATIONS 1  
( 146917 CH 12JAN1946 0.00055 ) (

*Gomphonema acuminatum* var. *pusillum* Grun.

*Gomphonema acuminatum* var. *pusillum* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 23, fig. 19. 1880.

286 GOACUMVP TCT NO OF STATIONS 1  
( 1350 BH 2 19AP1967 0.00220 ) (

*Gomphonema angustatum* (Kütz.) Rabh.

*Sphenella angustata* Kützing, Bacill., p. 83, pl. 8, fig. 4. 1844.

*Gomphonema angustatum* (Kütz.) Rabenhorst, Fl. Europaea Alg., Sect. 1, p. 283. 1864.

287 GCANGUST TCT NO OF STATIONS 22  
( 46758 EV 5JN1937 0.00357 ) ( 46763 EV 23AU1937 0.02029 ) ( 1236 C' 1 8JN1964 C.00175 )  
( 1377 GS 1 9MY1967 0.00396 ) ( 1544 MU 1 20C1967 0.00238 ) ( 1546 LU 1 20C1967 C.01000 )  
( 1520 HO 1 18SE1967 0.00943 ) ( 1521 SH 1 18SE1967 0.00577 ) ( 1522 BH 1 18SE1967 C.00365 )  
( 1531 GH 1 25SE1967 0.00845 ) ( 1545 WL 1 20C1967 0.00676 ) ( 1550 PR 1 50C1967 C.03717 )  
( 1428 MU 2 29MY1967 0.00904 ) ( 1426 MS 2 29MY1967 C.01050 ) ( 1427 LU 2 29MY1967 C.03632 )  
( 1417 HO 2 22MY1967 0.00748 ) ( 1350 BH 2 19AP1967 0.03524 ) ( 1400 SB 2 6MY1967 C.02383 )  
( 1354 GH 2 25AP1967 0.00173 ) ( 1429 WL 2 29MY1967 C.01062 ) ( 1403 CA 2 10MY1967 C.01308 )  
( 1404 MQ 2 10MY1967 0.03811 ) (

*Gomphonema angustatum* var. *producta* Grun.

*Gomphonema angustatum* var. *producta* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 24, figs. 52-55. 1880.

288 GOANGUPV TCT NO OF STATIONS 9  
( 46758 EV 5JN1937 0.01783 ) ( 1264 C' 1 10AU1964 0.00193 ) ( 1389 GS13 12MY1967 C.00258 )  
( 1567 GS15 50C1967 0.00159 ) ( 1545 WL 1 20C1967 0.00676 ) ( 1549 MQ 1 40C1967 C.01370 )  
( 1417 HO 2 22MY1967 0.00374 ) ( 1350 BH 2 19AP1967 0.00441 ) ( 1400 SB 2 6MY1967 C.00596 )

*Gomphonema angustatum* var. *sarcophagus* (Greg.) Grun.

*Gomphonema sarcophagus* Gregory, Micr. J., 4:13, pl. 1, fig. 42. 1856.

*Gomphonema angustatum* var. *sarcophagus* (Greg.) Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 25, fig. 2. 1880.

Coll: 1331.

*Gomphonema clevei* Fricke

*Gomphonema clevei* Fricke in: A. Schmidt, Atlas Diat., pl. 234, figs. 44-46. 1902.

289 GOCLEVEI TCT NO OF STATIONS 3  
( 1571 GS19 60C1967 0.00117 ) ( 1530 FR 1 24SE1967 C.01000 ) ( 1550 MR 1 50C1967 C.04956 )

*Gomphonema constrictum* Ehr.

*Gomphonema constrictum* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1830:63. 1832.

290 GECCNSTR TCT NO OF STATIONS 7  
( 3541 CH 1FE1881 0.00978 ) ( 46748 EV 130C1937 C.02135 ) ( 1566 GS14 50C1967 C.00183 )  
( 1572 GS20 60C1967 0.00090 ) ( 1575 GS28 60C1967 0.00129 ) ( 1426 MS 2 29MY1967 C.02100 )  
( 1407 SM 2 14MY1967 0.00597 ) (

*Gomphonema constrictum* var. *capitatum* (Ehr.) V. H.

*Gomphonema capitatum* Ehrenberg, Infusionsthierchen, p. 217, pl. 18, fig. 2. 1838.

*Gomphonema constrictum* var. *capitatum* (Ehr.) Van Heurck, Syn. Diat. Belgique, p. 123. 1885.

291	GCCNSVC	TCT	NO	CF	STATIONS	1
( 1350	BH 2	19AP1967	C.CC220	)	(	

*Gomphonema gracile* Ehr.

*Gomphonema gracile* Ehrenberg, Infusionsthierchen, p. 217, pl. 18, fig. 3. 1838.

292 GGRACIL TCT NC CF STATIONS 12													
( 146758	EV	5JUN1937	C.C1070 )	( 146757	EV	25JUL1937	C.CC481 )	( 146763	EV	23AUG1937	C.C4058 )		
( 146752	EV	15SEP1937	0.06530 )	( 1341	A 3	19AP1967	0.00108 )	( 1397	GS21	13MY1967	C.CC065 )		
( 1554	GS 1	30C1967	0.00356 )	( 1556	GS 3	30C1967	C.00521 )	( 1565	GS13	50C1967	C.C1521 )		
( 1550	MR 1	50C1967	0.01239 )	( 1350	BH 2	19AP1967	C.00441 )	( 1404	MC 2	10MY1967	C.C1270 )		

*Gomphonema gracile* var. *cymbelloides* Grun.

*Gomphonema gracile* var. *cymbelloides* Grunow ex Cleve, K. Svenska Vet.-Akad. Handl., Ny Förljd, 26(2):182. 1894.

293	GCGRACVA	TCT	NO	CF	STATIONS	1
( 1559	GS 7	40C1967	0.00350	)	(	

*Gomphonema grovei* M. Schm.

*Gomphonema grovei* M. Schmidt in: A. Schmidt, Atlas. Diat., pl. 214, figs. 13-18. 1899.

294	GCGRCVEI	TOT	NO	CF	STATIONS	6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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*Gomphonema intricatum* Kütz.

*Gomphonema intricatum* Kützling, Bacill., p. 87, pl. 9, fig. 4. 1844.

295	GGINTRIC TCT AC CF STATIONS					56								
( 13541	CH	1FE1881	0.01956	)	( 146521	CH	23NO1945	C.00129	)	( 146917	CH	12JA1946	C.CCC28	)
( 146923	CH	22NO1946	0.00219	)	( 146520	CH	20DE1946	C.00092	)	( 146909	CH	MR1947	C.CC455	)
( 146916	CH	4MY1947	0.00068	)	( 146506	CH	MY1947	0.00133	)	( 146907	CH	JUL1947	C.CC049	)
( 146922	CH	21AUG1947	C.00145	)	( 146758	EV	5JUN1937	0.00357	)	( 146764	EV	17JUL1937	C.CC806	)
( 146757	EV	25JUL1937	0.01444	)	( 146747	EV	1AUG1937	C.00743	)	( 146763	EV	23AUG1937	C.28409	)
( 146752	EV	15SEP1937	0.17414	)	( 146760	EV	22SEP1937	C.00492	)	( 146750	EV	24SEP1937	C.CC471	)
( 146748	EV	13C1937	0.17079	)	( 146767	EV	27C1937	C.01160	)	( 146768	EV	16MR1938	C.22049	)
( 146762	EV	18MR1938	0.02206	)	( 146751	EV	30MR1938	C.01117	)	( 146761	EV	27MY1938	C.CC273	)
( 1244	F 1	11JUN1964	C.CC110	)	( 1258	F 1	6JUL1964	C.01416	)	( 1259	F 2	6JUL1964	C.CC310	)
( 1279	E 1	16SEP1964	0.00393	)	( 1284	E 6	17SEP1964	C.01271	)	( 1285	F 1	15SEP1964	C.C8736	)
( 1390	GS14	12MY1967	0.00587	)	( 1391	GS15	12MY1967	C.00958	)	( 1392	GS16	12MY1967	C.CC616	)
( 1397	GS21	13MY1967	C.00065	)	( 1563	GS11	50C1967	C.00234	)	( 1566	GS14	50C1967	C.CC183	)
( 1567	GS15	50C1967	0.00476	)	( 1571	GS19	60C1967	C.00059	)	( 1572	GS20	60C1967	C.CC090	)
( 1573	GS21	60C1967	0.00112	)	( 1574	GS22	60C1967	0.04315	)	( 1522	BH 1	18SEP1967	C.CC182	)
( 1523	RA 1	19SEP1967	0.06458	)	( 1526	MG 1	20SEP1967	0.00569	)	( 1530	FR 1	24SEP1967	C.01000	)
( 1551	ES 1	50C1967	C.00799	)	( 1552	SM 1	60C1967	C.02641	)	( 1550	MR 1	50C1967	C.C6195	)
( 1553	SG 1	60C1967	0.03672	)	( 1426	MS 2	29MY1967	0.03150	)	( 1350	BH 2	19AP1967	C.01762	)
( 1402	TR 2	6MY1967	0.01083	)	( 1253	FR 2	23AP1967	C.C1055	)	( 1403	CA 2	10MY1967	C.C6539	)
( 1404	MO 2	10MY1967	0.02541	)	( 1407	SM 2	14MY1967	0.05374	)					)

*Gomphonema intricatum* var. *dichotomum* (Kütz.) Grun.

*Gomphonema dichotomum* Kützling, Linnaea, 8:569, pl. 15, fig. 48. 1833.

*Gomphonema intricatum* var. *dichotomum* (Kütz.) Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 24, figs. 30-31. 1880.

296	GGINTRVD TCT NO CF STATIONS													9
( 146752	EV	15SEP1937	0.04354	)	( 1388	GS12	12MY1967	C.00603	)	( 1574	GS22	60C1967	C.01726	)
( 1522	BH 1	18SEP1967	0.00729	)	( 1526	MG 1	20SEP1967	0.00569	)	( 1552	SM 1	60C1967	C.01981	)
( 1550	MR 1	50C1967	0.07434	)	( 1553	SG 1	60C1967	C.01469	)	( 1404	MC 2	10MY1967	C.C1270	)

*Gomphonema intricatum* var. *pumila* Grun.

*Gomphonema intricatum* var. *pumila* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 24, figs. 35-36. 1880.



297 GCINTRVP TCT NC OF STATIONS 47											
( 3540	CH	11MY1879	0.03727 )	( 46506	CH	MY1947	0.00066 )	( 46758	EV	5JN1937	C.01783 )
( 46770	EV	9JL1937	0.00596 )	( 46764	EV	17JL1937	0.01612 )	( 46757	EV	25JL1937	C.00963 )
( 46747	EV	1AU1937	0.01238 )	( 46763	EV	23AU1937	0.28409 )	( 46769	EV	7SE1937	C.02171 )
( 46752	EV	15SE1937	0.02177 )	( 46760	EV	22SE1937	0.00492 )	( 46748	EV	13CC1937	C.02135 )
( 46767	EV	27OC1937	0.00774 )	( 46768	EV	16MR1938	C.01470 )	( 1240	D 6	10JN1964	C.00153 )
( 1243	E 6	13JN1964	0.00626 )	( 1268	E 2	15AU1964	0.00274 )	( 1270	F 1	10AU1964	C.00817 )
( 1285	F 1	15SE1964	0.01165 )	( 1297	D 6	14CC1964	C.00190 )	( 1302	E 5	13OC1964	C.00405 )
( 1324	F 2	6NO1964	0.00466 )	( 1341	A 3	19AP1967	C.00108 )	( 1538	E 5	23SE1967	C.00552 )
( 1386	GS10	12MY1967	0.00287 )	( 1387	GS11	12MY1967	0.00792 )	( 1389	GS13	12MY1967	C.00258 )
( 1554	GS 1	3CC1967	0.00356 )	( 1555	GS 2	3CC1967	C.00353 )	( 1565	GS13	5OC1967	C.02535 )
( 1571	GS19	6OC1967	C.00059 )	( 1574	GS22	6OC1967	C.02301 )	( 1544	MU 1	20C1967	C.00238 )
( 1526	MO 1	20CE1967	0.01138 )	( 1528	SB 1	20SE1967	0.01444 )	( 1530	FR 1	24SE1967	C.02000 )
( 1552	SM 1	6OC1967	0.00660 )	( 1550	MR 1	5OC1967	C.11151 )	( 1553	SG 1	6OC1967	C.02203 )
( 1428	MU 2	29MY1967	0.00603 )	( 1417	HO 2	22MY1967	0.01122 )	( 1350	BH 2	19AP1967	C.01101 )
( 1399	PW 2	5MY1967	0.00680 )	( 1402	TR 2	6MY1967	0.00541 )	( 1403	CA 2	10MY1967	C.01308 )
( 1405	ES 2	12MY1967	0.03225 )	( 1407	SM 2	14MY1967	0.00597 )	(			

*Gomphonema lanceolatum* Ehr.

*Gomphonema lanceolatum* Ehrenberg, Abh. Akad. Wiss. Berlin, 1843:32, pl. 2(1), fig. 37. 1845.

298 GOLANCEO TCT NC CF STATIONS 13											
( 46764	EV	17JL1937	C.00806 )	( 46763	EV	23AU1937	C.04058 )	( 46748	EV	13CC1937	C.02135 )
( 46767	EV	27OC1937	0.00387 )	( 46768	EV	16MR1938	0.01470 )	( 1388	GS12	12MY1967	C.00603 )
( 1561	GS 9	4OC1967	0.01761 )	( 1575	GS28	6CC1967	C.00129 )	( 1550	MR 1	5OC1967	C.03717 )
( 1417	HO 2	22MY1967	0.00374 )	( 1418	SH 2	22MY1967	0.01555 )	( 1350	BH 2	19AP1967	C.01322 )
( 1402	TR 2	6MY1967	0.00541 )	(							

*Gomphonema lanceolatum* var. *insignis* (Greg.) Cleve

*Gomphonema insigne* Gregory, Micr. J., 4:12, pl. 1, fig. 39. 1856.

*Gomphonema lanceolatum* var. *insignis* (Greg.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Foljd, 26(2):183. 1894.

299 GOLANCEO TCT NC CF STATIONS 1											
( 46768	EV	16MR1938	0.04410 )	(							

*Gomphonema longiceps* Ehr.

*Gomphonema longiceps* Ehrenberg, Mikrog., pl. 4(3), fig. 27. 1854.

300 GOLONGIC ICT NO OF STATIONS 1											
( 46758	EV	5JN1937	0.00357 )	(							

*Gomphonema manubrium* Fricke

*Gomphonema manubrium* Fricke in: A. Schmidt, Atlas Diat., pl. 248, fig. 12. 1904.

Coll: 1549a.

*Gomphonema olivaceoides* Hust.

*Gomphonema olivaceoides* Hustedt, Arch. Hydrobiol., 43(3/4):397, pl. 37, figs. 9-12. 1950.

302 GCCLEUDE ICT NO OF STATIONS 17											
( 46758	EV	5JN1937	0.03205 )	( 46771	EV	11JN1937	C.00238 )	( 46743	EV	20JN1937	C.01285 )
( 46764	EV	17JL1937	0.00806 )	( 46757	EV	25JL1937	0.00963 )	( 46763	EV	23AU1937	C.02029 )
( 46752	EV	15SE1937	0.04354 )	( 46748	EV	13OC1937	C.06405 )	( 46749	EV	12MR1938	C.01214 )
( 46762	EV	18MR1938	0.06617 )	( 46756	EV	27AP1938	0.00168 )	( 1258	F 1	6JL1964	C.00472 )
( 1384	GS 8	10MY1967	0.00185 )	( 1530	FR 1	24SE1967	C.01000 )	( 1549	MU 1	4OC1967	C.01370 )
( 1552	SM 1	6OC1967	0.00660 )	( 1550	MR 1	5OC1967	0.03717 )	(			

*Gomphonema olivaceum* (Lyngb.) Kütz.

*Echinella olivacea* Lyngbye, Tent. Hydrophyt. Danicae, p. 209, pl. 70, fig. c. 1819.

*Gomphonema olivaceum* (Lyngb.) Kütz., Bacill., p. 85, pl. 7, figs. 13, 15. 1844.

## 303 GOOLIVAC TCT NC CF STATICS 82

(46921	CH	23NO1945	0.00194 )	(46524	CH	10MY1946	0.00282 )	(46920	CH	20DE1946	C.00062 )
(46905	CH	JAI1947	0.00123 )	(46516	CH	4MY1947	0.00170 )	(46919	CH	5JUN1947	0.00303 )
(46922	CH	21AU1947	0.00048 )	(46758	EV	5JUN1937	C.39940 )	(46743	EV	20JUN1937	C.00856 )
(46770	EV	9JUL1937	0.00596 )	(46764	EV	17JUL1937	0.00806 )	(46757	EV	25JUL1937	0.01926 )
(46747	EV	1AU1937	0.01238 )	(46763	EV	23AU1937	0.12175 )	(46765	EV	30AU1937	C.00558 )
(46752	EV	15SE1937	0.02177 )	(46760	EV	22SE1937	C.00492 )	(46748	EV	13OC1937	C.02135 )
(46767	EV	27CC1937	0.00387 )	(46768	EV	16MR1938	0.01470 )	(46762	EV	18PR1938	C.02206 )
(46751	EV	30MR1938	0.02233 )	(1227	C <sup>1</sup> 2	13MY1964	0.00110 )	(1236	C <sup>1</sup> 1	8JUN1964	C.00175 )
(1240	D 6	10JUN1964	0.00307 )	(1252	C <sup>1</sup> 1	16JUL1964	C.00279 )	(1273	C <sup>1</sup> 2	10SE1964	C.00538 )
(1279	E 1	16SE1964	0.00393 )	(1282	E 4	16SE1964	C.01108 )	(1285	F 1	15SE1964	C.00582 )
(1341	A 3	19AP1967	0.00868 )	(1342	A 4	19AP1967	0.00180 )	(1346	C 7	21AP1967	0.00401 )
(1368	A 3	4MY1967	0.00314 )	(1269	A 4	4MY1967	0.00373 )	(1372	C 5	5MY1967	C.00355 )
(1375	E 3	7MY1967	0.00241 )	(1416	E 5	28MY1967	0.00219 )	(1432	A 4	13JUN1967	C.00255 )
(1451	C 7	16JUL1967	0.00197 )	(1452	E 2	14JUL1967	C.00426 )	(1453	E 3	15JUL1967	C.00253 )
(1532	A 3	18SE1967	0.00329 )	(1538	E 5	23SE1967	0.00552 )	(1381	GS 5	10MY1967	C.00239 )
(1387	GS11	12MY1967	0.00396 )	(1389	GS13	12MY1967	C.00258 )	(1356	GS20	13MY1967	C.00222 )
(1397	GS21	13MY1967	C.00065 )	(1559	GS 7	4CC1967	C.00350 )	(1563	GS11	5OC1967	C.00234 )
(1567	GS15	5OC1967	0.00318 )	(1569	GS17	5OC1967	C.00297 )	(1571	GS19	6OC1967	C.00059 )
(1573	GS21	6OC1967	0.00224 )	(1574	GS22	6OC1967	0.00863 )	(1575	GS28	6OC1967	C.00129 )
(1524	MI 1	20SE1967	0.02189 )	(1546	LU 1	20CC1967	0.02501 )	(1521	SH 1	18SE1967	C.00577 )
(1522	BH 1	18SE1967	0.01641 )	(1545	WL 1	20CC1967	C.02703 )	(1549	MQ 1	4CC1967	C.01370 )
(1551	ES 1	5OC1967	0.00799 )	(1550	MR 1	5OC1967	C.24780 )	(1553	SG 1	6CC1967	C.00734 )
(1428	MU 2	29MY1967	0.00904 )	(1426	MS 2	29MY1967	0.04199 )	(1351	MI 2	21AP1967	C.00621 )
(1427	LU 2	29MY1967	0.04843 )	(1417	HQ 2	22MY1967	0.04112 )	(1350	BH 2	19AP1967	C.45338 )
(1401	MD 2	6MY1967	0.05292 )	(1402	TR 2	6MY1967	C.01083 )	(1400	SB 2	6MY1967	C.06552 )
(1354	GH 2	25AP1967	0.01553 )	(1429	WL 2	29MY1967	C.02123 )	(1403	CA 2	10MY1967	C.05231 )
(1407	SM 2	14MY1967	0.00597 )	(1349	CI 2	19AP1967	0.00359 )	(1406	GB 2	13MY1967	C.02696 )
(1423	WA 2	25MY1967	0.01285 )								

*Gomphonema olivaceum* var. *calcareum* Cleve

*Gomphonema olivaceum* var. *calcareum* Cleve, Ofv. K. Svenska Vet.-Akad. Forhandl., 24:231, pl. 4, fig. 7. 1868.

## 304 GCCLIVVC TCT NO OF STATICS 9

(46758	EV	5JUN1937	0.01426 )	(46757	EV	25JUL1937	C.01444 )	(46747	EV	1AU1937	C.00248 )
(46763	EV	23AU1937	0.02029 )	(1285	F 1	15SE1964	C.00582 )	(1342	A 4	19AP1967	C.00180 )
(1526	MO 1	20SE1967	0.01138 )	(1527	TR 1	20SE1967	0.00629 )	(1529	KW 1	20SE1967	0.04797 )

*Gomphonema parvulum* (Kütz.) Kütz.

*Sphenella* ? *parvula* Kützing, Bacill., p. 83, pl. 30, fig. 63. 1844.

*Gomphonema parvulum* (Kütz.) Kützing, Sp. Alg., p. 65. 1849.

## 305 GOPARVVM TCT NC CF STATICS 18

(46909	CH	MR1947	0.00455 )	(46758	EV	5JUN1937	0.00357 )	(46768	EV	16MR1938	C.01470 )
(1258	F 1	6JUL1964	0.00236 )	(1265	C <sup>1</sup> 2	10AU1964	0.00224 )	(1279	E 1	16SE1964	C.00393 )
(1541	E 2	11OC1967	0.00532 )	(1387	GS11	12MY1967	C.00792 )	(1571	GS19	6OC1967	C.00117 )
(1573	GS21	6OC1967	0.00112 )	(1574	GS22	6OC1967	0.00288 )	(1524	MI 1	20SE1967	C.04378 )
(1520	HO 1	18SE1967	0.00471 )	(1522	BH 1	18SE1967	0.00182 )	(1523	RA 1	15SE1967	C.03690 )
(1350	BH 2	19AP1967	0.05506 )	(1401	MO 2	6MY1967	0.00588 )	(1406	GB 2	13MY1967	C.00270 )

*Gomphonema parvulum* var. *micropus* (Kütz.) Cleve

*Gomphonema micropus* Kützing, Bacill., p. 84, pl. 8, fig. 12. 1844.

*Gomphonema parvulum* var. *micropus* (Kütz.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):180. 1894.

## 306 GCCLAVM TCT NO OF STATICS 1

(1553 SG 1 6OC1967 0.00734 )

*Gomphonema sphaerophorum* Ehr.

*Gomphonema sphaerophorum* Ehrenberg, Ber. Akad. Wiss. Berlin, 1845:78. 1846.

## 307 GOSPHAER TCT NO OF STATICS 1

(1350 BH 2 19AP1967 0.00661 )

*Gomphonema subtile* Ehr.

*Gomphonema subtile* Ehrenberg, Ber. Akad. Wiss. Berlin, 1841:128. 1843.

## 308 GOSUBTIL TCT NO OF STATICS 1

(1568 GS16 5OC1967 0.00144 )

*Gomphonema subtile* var. *sagitta* (Schum.) Grun.

*Gomphonema sagitta* Schumann, Schrift. Phys.-Ökon. Ges. Königsberg, 3:187, pl. 9, figs. 19a-d. 1863.

*Gomphonema subtile* var. *sagitta* (Schum.) Grun. in: Van Heurck, Syn. Diat. Belgique, pl. 23, fig. 27. 1880.

309	GCSUBTVS	TCT	NO	OF	STATIONS	1
( 1348	E 5	23AP1967	0.00137	)	(	

*Gomphonema tergestinum* (Grun.) Fricke

*Gomphonema semiapertum* var. *tergestina* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 25, fig. 40. 1880.

*Gomphonema tergestinum* (Grun.) Fricke in: A. Schmidt, Atlas Diat., pl. 234, figs. 39-43. 1902.

310	GOTERGES	TCT	NO	OF	STATIONS	2
( 1550	MR 1	5CC1967	0.01239	)	( 1404	MC 2
						10MY1967
						0.02541
						)

*Species incertae sedis*

*Gomphonema* sp. #2.

311	GOSPECCB	TCT	NO	OF	STATIONS	12
(46919	CH	5JN1947	0.00455	)	(46758	EV
(46768	EV	16MR1938	0.02940	)	(46751	EV
( 1394	GS18	13MY1967	0.00172	)	( 1397	GS21
( 1550	MR 1	5CC1967	0.01239	)	( 1404	MC 2
						10MY1967
						0.02541
						)
						155E1937
						0.06530
						)
						155E1964
						0.00582
						)
						1560
						GS 8
						40C1967
						0.00472
						)
						12MY1967
						0.00645
						)

*Gomphonema* sp. #3.

312	GCSPECOC	TCT	NO	OF	STATIONS	3
(46920	CH	20DE1946	0.00031	)	(46752	EV
						155E1937
						0.02177
						)
						146767
						EV
						270C1937
						0.00387
						)

*Gomphonema* sp. #6.

313	GCSPECOF	TCT	NO	OF	STATIONS	1
( 1401	MC 2	6MY1967	0.00586	)	(	

Genus *Gyrosigma* Hass.

Hassall, British Freshw. Algae, p. 435. 1845.

Although most freshwater species of the genus *Gyrosigma* find their primary habitat in epipelagic communities, many are successful facultative planktonists. Members of the genus are found in many plankton collections from Lake Michigan, but usually in small numbers.

*Gyrosigma acuminatum* (Kütz.) Rabh.

*Frustulia acuminata* Kützling, Linnaea, 8:555, pl. 14, fig. 36. 1833.

*Gyrosigma acuminatum* (Kütz.) Rabenhorst, Süßw.-Diat., p. 47, pl. 5, fig. 5a. 1853.

315	GYACUMIN	TCT	NO	OF	STATIONS	1
( 1406	GB 2	13MY1967	0.00270	)	(	

*Gyrosigma attenuatum* (Kütz.) Rabh.

*Frustulia attenuatum* Kützling, Linnaea, 8:555, pl. 14, fig. 35. 1833.

*Gyrosigma attenuatum* (Kütz.) Rabenhorst, Süßw.-Diat., p. 47, pl. 5, fig. 2. 1853.

## 316 GYATTENU TCT NC OF STATIONS 19

( 3540	CH	11MY1879	0.00932 )	( 3541	CH	1FE1881	0.02535 )	( 46907	CH	JL1947	C.00099 )
( 1284	E 6	17SE1964	0.00318 )	( 1285	F 1	15SE1964	0.00582 )	( 1384	GS 8	10MY1967	C.00185 )
( 1387	GS11	12MY1967	0.00396 )	( 1390	GS14	12MY1967	0.00587 )	( 1394	GS18	13MY1967	C.00172 )
( 1567	GS15	50C1967	0.00318 )	( 1572	GS20	60C1967	0.00090 )	( 1574	GS22	60C1967	C.00288 )
( 1575	GS28	60C1967	0.00129 )	( 1547	MS 1	20C1967	0.00798 )	( 1526	MO 1	20SE1967	C.02276 )
( 1527	TR 1	20SE1967	0.01258 )	( 1553	SG 1	60C1967	0.00734 )	( 1426	MS 2	29MY1967	C.01050 )
( 1350	BH 2	19AP1967	0.01542 )								

*Gyrosigma nodiferum* (Grun.) Reim.

*Pleurosigma nodiferum* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):59. 1880.

*Gyrosigma nodiferum* (Grun.) Reimer in: Patrick and Reimer, Acad. Nat. Sci. Philadelphia Monogr. 13:320, pl. 24, fig. 2. 1966.

## 317 GYNODIFE TCT NC OF STATIONS 22

( 3541	CH	1FE1881	0.00978 )	( 46520	CH	20DE1946	0.00031 )	( 46906	CH	MY1947	C.00066 )
( 46764	EV	17JL1937	0.00806 )	( 46757	EV	25JL1937	0.00481 )	( 46747	EV	1AU1937	C.00743 )
( 1260	F 3	6JL1964	0.00191 )	( 1323	F 1	6NO1964	0.00139 )	( 1346	C 7	21AP1967	C.00134 )
( 1534	A 6	19SE1967	0.00310 )	( 1380	GS 4	9MY1967	0.00336 )	( 1388	GS12	12MY1967	C.05430 )
( 1389	GS13	12MY1967	0.00258 )	( 1390	GS14	12MY1967	0.04698 )	( 1391	GS15	12MY1967	C.04310 )
( 1393	GS17	13MY1967	0.01644 )	( 1394	GS18	13MY1967	0.01892 )	( 1395	GS19	13MY1967	C.00235 )
( 1563	GS11	50C1967	0.00234 )	( 1568	GS16	50C1967	0.00433 )	( 1552	SM 1	60C1967	C.01981 )
( 1553	SG 1	60C1967	0.00734 )								

*Gyrosigma sciotense* (Sulliv. and Wormley) Cleve

*Pleurosigma sciotense* Sullivant and Wormley, American J. Sci., Ser. 2, 27:251. 1859.

*Gyrosigma sciotense* (Sulliv. and Wormley) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 27(3):pl. 1, fig. 5. 1895.

## 318 GYSCIOCTE TCT NC OF STATIONS 1

( 1405	ES 2	12MY1967	0.00645 )								
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## 319 GYSCIOQT TCT NC OF STATIONS 12

( 1231	E 3	16MY1964	0.00245 )	( 1392	GS16	12MY1967	0.00616 )	( 1394	GS18	13MY1967	C.00344 )
( 1395	GS19	13MY1967	0.00117 )	( 1566	GS14	50C1967	0.00367 )	( 1567	GS15	50C1967	C.05081 )
( 1569	GS17	50C1967	0.08324 )	( 1570	GS18	50C1967	0.27767 )	( 1571	GS19	60C1967	C.00117 )
( 1573	GS21	60C1967	0.00112 )	( 1574	GS22	60C1967	0.00288 )	( 1575	GS28	60C1967	C.01677 )

*Gyrosigma spencerii* (Quek.) Griff. and Henfr.

*Navicula spencerii* Quekett, Pract. Treat. Micr., p. 440, pl. 9. 1848.

*Gyrosigma spencerii* (Quek.) Griffith and Henfrey, Microgr. Dict., 1st. ed., p. 303, pl. 11, fig. 17. 1856.

## 320 GYSPENCE TCT NC OF STATIONS 5

( 3540	CH	11MY1879	0.00466 )	( 1275	E 1	16SE1964	0.00393 )	( 1285	F 1	15SE1964	C.01747 )
( 1569	GS17	50C1967	0.00149 )	( 1407	SM 2	14MY1967	0.01194 )				

*Gyrosigma spencerii* var. *curvula* (Grun.) Reim.

*Pleurosigma spencerii* var. *curvula* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):60. 1880.

*Gyrosigma spencerii* var. *curvula* (Grun.) Reimer in: Patrick and Reimer, Acad. Nat. Sci. Philadelphia Monogr., 13:316, pl. 23, fig. 8. 1966.

## 321 GYSPENCV TCT NC OF STATIONS 17

( 46909	CH	MR1947	0.00455 )	( 46506	CH	MY1947	0.00066 )	( 46907	CH	JL1947	C.00049 )
( 46922	CH	21AU1947	0.00048 )	( 1387	GS11	12MY1967	0.00396 )	( 1574	GS22	60C1967	C.00575 )
( 1521	SH 1	18SE1967	0.00577 )	( 1526	MC 1	20SE1967	0.00569 )	( 1527	TR 1	20SE1967	C.00629 )
( 1553	SG 1	60C1967	0.00734 )	( 1426	MS 2	29MY1967	0.01050 )	( 1427	LU 2	29MY1967	C.01211 )
( 1401	MO 2	6MY1967	0.01176 )	( 1402	TR 2	6MY1967	0.01624 )	( 1407	SM 2	14MY1967	C.00597 )
( 1349	CI 2	19AP1967	0.00359 )	( 1422	GA 2	23MY1967	0.00511 )				

*Gyrosigma temperei* Cleve

*Gyrosigma temperei* Cleve, Diatomiste, 2(15):55, pl. 3, fig. 3. 1893.

322 GYTEMPE ICT NO OF STATIONS 2  
 ( 3507 CH 19FE1881 0.01132 ) ( 1550 MR 1 50C1967 0.01239 ) (

*Gyrosigma wormleyi* (Sulliv.) Boyer

*Pleurosigma wormleyi* Sullivant in: Sullivant and Wormley, Amer. J. Sci., Ser. 2, 27:251. 1859.

*Gyrosigma wormleyi* (Sulliv.) Boyer, Contr. Biol. Micr. Sect. Acad. Nat. Sci. Philadelphia, 1:7, pl. 2, fig. 10. 1922.

323 GYWCRLPE ICT NO OF STATIONS 1  
 ( 1531 GH 1 25SE1967 0.00845 ) (

Genus *Hannaea* Patr.

Patrick in: Patrick and Reimer

Acad. Nat. Sci. Philadelphia Monogr., 13:131. 1966.

Members of the genus *Hannaea* are most abundant in periphyton communities, especially in mountain streams and cold, oligotrophic lakes. Like several members of the closely related genus *Fragilaria* which have similar habit, they are apparently successful in the plankton under certain conditions. In Lake Michigan occasional specimens are taken in plankton collections from nearshore areas but the genus is rarely noted in offshore collections.

*Hannaea arcus* (Ehr.) Patr.

*Navicula arcus* Ehrenberg, Infusionsthierchen, p. 182, pl. 21, fig. 10. 1838.

*Hannaea arcus* (Ehr.) Patrick in: Patrick and Reimer, Acad. Nat. Sci. Philadelphia Monogr., 13:132, pl. 4, fig. 20. 1966.

324 HNARCUS ICT NO OF STATIONS 1  
 ( 1244 F 1 11JN1964 0.00110 ) (

*Hannaea arcus* var. *amphioxys* (Rabh.) Patr.

*Ceratoneis amphioxys* Rabenhorst, Süßw.-Diat., p. 37, pl. 9, fig. 4. 1853.

*Hannaea arcus* var. *amphioxys* (Rabh.) Patrick in: Patrick and Reimer, Acad. Nat. Sci. Philadelphia Monogr., 13:133, pl. 4, fig. 21. 1966.

325 HNARCUVA ICT NO OF STATIONS 2  
 ( 1258 F 1 6JL1964 0.00236 ) ( 1403 CA 2 10MY1967 0.02615 ) (

Genus *Hantzschia* Grun.

Grunow in: Cleve and Grunow

K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):103. 1880.

Freshwater members of the genus *Hantzschia* are most abundant in epipellic communities in aquatic habitats and in the soil flora. Only occasional isolated specimens have been noted in plankton collections from Lake Michigan.

*Hantzschia amphioxys* (Ehr.) Grun.

*Eunotia amphioxys* Ehrenberg, Abh. Akad. Wiss. Berlin, 1841:413, pl. 1(1), fig. 26. 1843.

*Hantzschia amphioxys* (Ehr.) Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):103. 1880.

( 1320 E 4 7ND1964 0.00207 ) ( 1402 TR 2 6MY1967 0.00541 ) (

*Hantzschia amphioxys* var. *capitata* O. Müll.*Hantzschia amphioxys* var. *capitata* O. Müll., Bot. Jahrb., 43(4):34, pl. 2, fig. 28. 1909.

( 46917 CH 12JA1946 0.00028 ) ( 1512 E 3 1SE1967 0.00393 ) ( 1569 GS17 5GC1967 0.00149 )

Genus *Mastogloia* Thw.

Thwaites ex Wm. Smith, Syn. British Diat., Vol. 2, p. 63. 1856.

Freshwater members of the genus *Mastogloia* find their primary habitat in periphyton and epipelagic communities. Only occasional specimens are noted in plankton collections from Lake Michigan.

*Mastogloia grevillei* Wm. Smith*Mastogloia grevillei* Wm. Smith, Syn. British Diat., Vol. 2, p. 65, Supp. pl. 62, fig. 389. 1856.

( 1388 GS12 12MY1967 0.00603 ) ( 1573 GS21 6GC1967 0.00112 ) ( 1350 BH 2 19AP1967 0.00220 )

*Mastogloia smithii* Thw.*Mastogloia smithii* Thwaites ex Wm. Smith, Syn. British Diat., Vol. 2, p. 65, pl. 54, fig. 341. 1856.

( 46973 CH 1876 0.02362 ) ( 46505 CH JA1947 0.00123 ) ( 1350 BH 2 19AP1967 0.00220 )

*Mastogloia smithii* var. *amphicephala* Grun.*Mastogloia smithii* var. *amphicephala* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 4, fig. 27. 1880.

Coll: 1100.

*Mastogloia smithii* var. *lacustris* Grun.*Mastogloia smithii* var. *lacustris* Grunow in: Schneider, Naturw. Beitr. Kenntn. Kaukasusländer, p. 111. 1878.

( 1244 F 1 11JN1964 0.00110 ) ( 1343 A 6 19AP1967 0.00069 ) ( 1407 SM 2 14MY1967 0.00597 )

Genus *Melosira* Agardh

Agardh, Syst. Alg., p. 8. 1824.

*Melosira distans* (Ehr.) Kütz.*Gaillonella distans* Ehrenberg, Ber. Akad. Wiss. Berlin, 1836:170. 1836.*Melosira distans* (Ehr.) Kütz., Bacill., p. 170, pl. 2, fig. 12. 1844.

Cells cylindrical, united by the valve faces into short colonies. Individual valves of specimens from Lake Michigan 4-12 $\mu$  in diameter, 4-6 $\mu$  in height (valve mantle). Frustules are heavily silicified. Ornamentation of

the valve surface consists of irregularly arranged poroids. Ornamentation of the valve mantle consists of poroids arranged in rows usually parallel to the pervalvar axis. Rows of poroids usually about 13-15 in  $10\mu$ , poroids within the rows about 15-18 in  $10\mu$ . In the smaller specimens the arrangement of these structures tends to become irregular. The margin of the valve is furnished with a corona of small spines. Pseudosulcus apparent, usually deeply incised. Sulcus deeply incised, forming a sharp angle. Because of the deep incision of the sulcus and pseudosulcus, the margins of the valve mantle tend to be convex and the neck of each valve is more or less bowl-shaped.

This species is uncommon in our collections. Occasional populations are found in the modern plankton and isolated valves occur in many collections. We suspect that some of these are derived from Pleistocene deposits because of their corroded condition and random occurrence.

332 MEDISTAN ICT NO OF STATIONS 12											
( 3540	CH	11MY1879	0.03261 )	( 46510	CH	0C1945	0.00546 )	( 46914	CH	19AP1946	0.00427 )
( 46923	CH	22NO1946	0.00656 )	( 46920	CH	20DE1946	0.00092 )	( 46905	CH	JA1947	0.00368 )
( 46916	CH	4MY1947	0.00238 )	( 46507	CH	JL1947	0.00197 )	( 1536	E 2	24SE1967	0.00273 )
( 1537	E 3	24SE1967	0.00431 )	( 1538	E 5	23SE1967	0.00552 )	( 1554	CS 1	30C1967	0.00712 )

*Melosira distans* var. *alpigena* Grun.

*Melosira distans* var. *alpigena* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 86, figs. 28-29. 1882.

Distinguished from the nominate variety by its smaller size range, lesser degree of silicification and finer ornamentation. Specimens from Lake Michigan 3-6 $\mu$  in diameter, 3-4 $\mu$  high. Striae on the valve mantle about 16 in  $10\mu$ , poroids within the rows about 22 in  $10\mu$ . The striae are usually oblique to the pervalvar axis and tend to spiral around the frustule rather than being parallel to the pervalvar axis as in the nominate variety.

This entity is very rare in our collections. All specimens observed appear to be of modern derivation.

333 MEDISTVA ICT NO OF STATIONS 15											
( 3541	CH	1FE1881	0.01956 )	( 46744	EV	60C1937	0.00488 )	( 1341	A 3	19AP1967	0.00651 )
( 1342	A 4	19AP1967	0.00361 )	( 1431	A 3	12JN1967	0.00772 )	( 1436	E 2	15JN1967	0.01809 )
( 1437	E 3	15JN1967	0.00269 )	( 1446	A 3	11JL1967	0.00978 )	( 1451	C 7	16JL1967	0.00394 )
( 1452	E 2	14JL1967	0.00852 )	( 1453	E 3	15JL1967	0.01011 )	( 1532	A 3	18SE1967	0.00657 )
( 1538	E 5	23SE1967	0.01105 )	( 1543	E 5	100C1967	0.00718 )	( 1395	CS15	13MY1967	0.00470 )

*Melosira granulata* (Ehr.) Ralfs

*Gaillonella granulata* Ehrenberg, Abh. Akad. Wiss. Berlin, 1841:415. 1843.  
*Melosira granulata* (Ehr.) Ralfs in: Pritchard, Hist. Infus., p. 820. 1861.

Cells cylindrical, joined by the valve faces into long, closely appressed colonies. Individual valves of specimens from Lake Michigan 5-20 $\mu$  in diameter, 5-20 $\mu$  high. Pseudosulcus poorly developed, not apparent, sulcus only slightly incised consisting of a sharply angled furrow. Neck elongate, of the same diameter as the valve. The margin of the valve is often furnished with very coarse spines of irregular length. The longer of these spines often overlap one valve of the next cell in the colony. The degree of silicification and the ornamentation of the frustule is extremely variable. The valve mantle is more heavily silicified than the valve surface. Ornamentation of the valve surface poorly developed consisting of a few irregularly arranged poroids, often without visible structure. The ornamentation of the valve mantle is pleomorphic. In all cases the

poroids are arranged in rows oblique to the perivalvar axis, thus spiraling around the long dimension of the colony. The following types of ornamentation are found:

Status  $\alpha$ : Ornamentation of the valve mantle consisting of rows of coarse, more or less rectangular areolae. Areolae rows about 8-9 in  $10\mu$  with 8-10 areolae in  $10\mu$  within the rows. Frustules are heavily silicified.

Status  $\beta$ : Both finely areolate and coarsely areolate frustules found in the same colony.

Status  $\gamma$ : Ornamentation of the valve mantle consisting of fine, more or less circular puncta. Punctae rows 10-15 in  $10\mu$  with 10-15 puncta in  $10\mu$  within the rows.

This species is often abundant in eutrophied portions of Lake Michigan.

334 MEGRANUL ICT NO OF STATIONS 262

(60973	CH	1876	0.16533	(	3540	CH	11MY1879	0.17705	(	3541	CH	1FE1881	0.45975	)
( 3507	CH	19FE1881	0.12452	(	46510	CH	OC1945	63.90089	(	46921	CH	23NC1945	8.74351	)
(46908	CH	DE1945	1.75226	(	46517	CH	12JA1946	1.35155	(	46915	CH	20FE1946	3.65886	)
(46914	CH	19AP1946	3.36561	(	46524	CH	10MY1946	12.38078	(	46923	CH	22NC1946	14.20641	)
(46920	CH	20CE1946	2.99412	(	46505	CH	JA1947	5.29722	(	46909	CH	MR1947	2.55979	)
(46912	CH	AP1947	5.61113	(	46516	CH	4MY1947	4.41077	(	46906	CH	MY1947	3.71004	)
(46915	CH	5JUN1947	0.54172	(	46507	CH	JL1947	4.00655	(	46913	CH	6AU1947	4.7907	)
(46922	CH	21AU1947	4.31575	(	46758	EV	5JUN1937	0.02496	(	46771	EV	11JUN1937	0.00713	)
(46743	EV	20JUN1937	0.04710	(	46745	EV	3JL1937	2.34065	(	46770	EV	9JL1937	0.25644	)
(46764	EV	17JL1937	3.15874	(	46757	EV	25JL1937	0.89548	(	46747	EV	1AU1937	0.64856	)
(46763	EV	23AU1937	0.42614	(	46765	EV	30AU1937	7.96430	(	46765	EV	7SE1937	0.67503	)
(46752	EV	15SE1937	5.70309	(	46760	EV	22SE1937	8.82367	(	46750	EV	24SE1937	8.84197	)
(46744	EV	6OC1937	6.55482	(	46748	EV	13OC1937	0.46968	(	46767	EV	27OC1937	0.30947	)
(46745	EV	12MR1938	0.03641	(	46762	EV	18MR1938	2.11734	(	46772	EV	18AP1938	0.04258	)
(46756	EV	27AP1938	0.03358	(	46759	EV	19MY1938	0.00338	(	46761	EV	27MY1938	0.02453	)
(46766	EV	14DE1938	2.94677	(	1233	B 3	5JN2964	3.00064	(	1234	B 3	18JN1964	1.10084	)
( 1235	C 7	16JUN1964	0.01130	(	1236	C* 1	8JN1964	2.20542	(	1237	C* 2	8JN1964	1.53390	)
( 1238	D 3	11JUN1964	0.00800	(	1240	D 6	10JN1964	0.25770	(	1241	E 2	13JN1964	0.55298	)
( 1242	E 3	13JUN1964	0.00300	(	1243	E 6	13JN1964	0.10023	(	1244	F 1	11JN1964	0.05811	)
( 1245	F 2	11JUN1964	0.02766	(	1246	F 3	11JN1964	0.01195	(	1247	B 3	14JL1964	0.26892	)
( 1248	B 3	24JL1964	0.27587	(	1440	B 6	11JL1964	0.02948	(	1441	B 6	24JL1964	0.00220	)
( 1249	C 3	8JL1964	0.29332	(	1250	C 6	10JL1964	0.00822	(	1251	C 7	16JL1964	0.14485	)
( 1252	C* 1	16JL1964	3.90516	(	1253	C* 2	16JL1964	0.28985	(	1254	D 2	15JL1964	0.26815	)
( 1255	D 5	15JL1964	0.00257	(	1256	E 2	14JL1964	0.09709	(	1257	E 3	14JL1964	0.00718	)
( 1258	F 1	6JL1964	0.04248	(	1259	F 2	6JL1964	0.09606	(	1260	F 3	6JL1964	0.01719	)
( 1261	B 3	2AU1964	0.08046	(	1262	B 3	17AU1964	0.10500	(	1442	B 6	2AU1964	0.01365	)
( 1264	C* 1	10AU1964	5.94686	(	1265	C* 2	10AU1964	0.04024	(	1266	D 3	18AU1964	0.01403	)
( 1267	D 6	18AU1964	0.01081	(	1268	E 2	15AU1964	0.11489	(	1269	E 3	15AU1964	0.02837	)
( 1270	F 1	10AU1964	0.01089	(	1444	B 6	19SE1964	0.00606	(	1271	C 7	22SE1964	0.02611	)
( 1272	C* 1	10SE1964	0.18881	(	1273	C* 2	10SE1964	0.02151	(	1274	D 1	17SE1964	10.51002	)
( 1275	D 2	17SE1964	4.51584	(	1276	D 3	18SE1964	1.45284	(	1277	D 4	18SE1964	0.01239	)
( 1278	D 6	18SE1964	0.53807	(	1279	E 1	16SE1964	3.84812	(	1280	E 2	16SE1964	0.36081	)
( 1281	E 3	16SE1964	0.00785	(	1282	E 4	16SE1964	0.02216	(	1283	E 5	16SE1964	0.02452	)
( 1284	F 6	17SE1964	2.11292	(	1285	F 1	15SE1964	0.22713	(	1286	F 2	15SE1964	0.04378	)
( 1287	F 3	15SE1964	0.08507	(	1288	B 3	15OC1964	7.00945	(	1445	B 6	14OC1964	0.66210	)
( 1290	C* 1	16OC1964	0.30699	(	1261	C* 2	16OC1964	0.68490	(	1292	D 1	15OC1964	0.57394	)
( 1293	D 2	15OC1964	0.04245	(	1294	D 3	15OC1964	0.02967	(	1295	D 4	15OC1964	0.00595	)
( 1296	D 5	14CC1964	0.00352	(	1257	D 6	14OC1964	0.29131	(	1298	E 1	12OC1964	0.47124	)
( 1299	E 2	12OC1964	0.73516	(	1300	E 3	13OC1964	0.22552	(	1301	E 4	13OC1964	0.01766	)
( 1302	E 5	13CC1964	0.29962	(	1303	E 6	13OC1964	0.29106	(	1304	F 1	11OC1964	0.08397	)
( 1305	F 2	11OC1964	0.05520	(	1306	F 3	11CC1964	0.04158	(	1307	B 6	NO1964	0.50512	)
( 1308	C 7	6NO1964	0.01825	(	1309	C* 1	10NO1964	0.08040	(	1310	C* 2	10NC1964	0.03401	)
( 1311	D 1	8NO1964	0.02064	(	1312	D 2	8NO1964	0.29179	(	1313	D 3	9NC1964	0.02896	)
( 1314	D 4	9NO1964	0.01435	(	1315	D 5	9NO1964	0.01820	(	1316	D 6	9NC1964	0.06422	)
( 1317	E 1	6NO1964	0.15892	(	1318	E 2	7NO1964	0.22639	(	1319	E 3	7NC1964	0.10997	)
( 1320	E 4	7NO1964	0.07859	(	1321	E 5	7NO1964	0.26496	(	1322	E 6	7NC1964	0.40657	)
( 1323	F 1	6NO1964	0.08920	(	1324	F 2	6NO1964	0.32609	(	1325	F 3	6NC1964	0.32495	)
( 1336	C 3	27JA1967	0.67395	(	1337	C 3	2MR1967	0.33510	(	1339	C 5	28MR1967	0.02182	)
( 1340	C 7	28MR1967	0.00291	(	1341	A 3	19AP1967	0.32978	(	1342	A 4	19AP1967	0.31581	)
( 1343	A 6	19AP1967	0.00139	(	1344	C 2	25AP1967	0.00331	(	1346	C 7	21AP1967	0.00935	)
( 1368	A 3	4MY1967	0.00628	(	1369	A 4	4MY1967	0.00373	(	1371	C 3	4MY1967	0.01385	)
( 1408	A 3	23MY1967	0.01789	(	1411	C 3	31MY1967	0.02462	(	1412	C 5	31MY1967	0.07155	)
( 1414	E 2	28MY1967	0.00336	(	1415	E 3	28MY1967	0.00450	(	1416	E 5	28MY1967	0.00875	)
( 1431	A 3	12JN1967	0.00515	(	1432	A 4	13JN1967	0.01533	(	1433	C 3	17JN1967	0.18086	)
( 1434	C 5	17JN1967	0.01794	(	1435	C 7	13JN1967	0.01263	(	1436	E 2	15JN1967	0.02895	)
( 1446	A 3	11JL1967	13.18429	(	1447	A 4	11JL1967	0.09590	(	1448	A 6	10JL1967	0.01061	)
( 1451	C 7	16JL1967	0.03543	(	1452	E 2	14JL1967	0.29804	(	1454	E 5	15JL1967	0.30806	)
( 1504	A 3	28AU1967	0.34564	(	1511	E 2	1SE1967	2.14876	(	1532	A 3	18SE1967	2.75944	)
( 1533	A 4	19SE1967	0.40850	(	1534	A 6	19SE1967	2.38886	(	1535	C 7	20SE1967	0.07081	)
( 1536	E 2	24SE1967	2.48132	(	1537	E 3	24SE1967	0.02588	(	1538	E 5	23SE1967	0.23201	)
( 1539	C 3	4OC1967	2.28942	(	1540	C 5	4OC1967	0.09927	(	1541	E 2	11OC1967	4.84274	)
( 1542	F 3	11OC1967	0.07120	(	1543	E 5	10CC1967	0.25140	(	1380	GS 4	9MY1967	0.00336	)
( 1387	GS11	12MY1967	0.01188	(	1388	GS12	12MY1967	4.22323	(	1389	GS13	12MY1967	2.52688	)
( 1390	GS14	12MY1967	2.05520	(	1391	GS15	12MY1967	1.22588	(	1392	GS16	12MY1967	8.41372	)
( 1393	GS17	13MY1967	1.02454	(	1354	GS18	13MY1967	1.32453	(	1395	GS19	13MY1967	2.05510	)
( 1396	GS20	13MY1967	35.89212	(	1397	GS21	13MY1967	3.80004	(	1398	GS22	14MY1967	0.02429	)
( 1554	GS 1	30C1967	1.08162	(	1555	GS 2	30C1967	0.20833	(	1556	GS 3	30C1967	0.02607	)
( 1557	GS 4	30C1967	0.16816	(	1558	GS 5	40C1967	0.17045	(	1559	GS 7	40C1967	0.26929	)
( 1560	GS 8	40C1967	0.08029	(	1561	GS 9	40C1967	0.09978	(	1562	GS10	50C1967	0.09622	)
( 1563	GS11	50C1967	3.60095	(	1564	GS12	50C1967	7.14333	(	1565	GS13	50C1967	2.30707	)
( 1566	GS14	50C1967	21.18877	(	1567	GS15	50C1967	28.11824	(	1568	GS16	50C1967	42.92867	)



( 1569	GS17	5CC1967	13.63103 )	( 1570	GS18	5CC1967	17.35422 )	( 1571	GS19	6CC1967	41.10005 )
( 1572	GS20	6CC1967	31.67134 )	( 1573	GS21	6CC1967	53.22925 )	( 1574	GS22	6CC1967	1.00673 )
( 1575	GS28	6CC1967	39.01532 )	( 1544	ML 1	20C1967	82.57916 )	( 1547	MS 1	20C1967	6C.42314 )
( 1546	LU 1	20C1967	78.18736 )	( 1520	HD 1	18SE1967	35.07944 )	( 1521	SH 1	18SE1967	6C.92775 )
( 1522	BH 1	18SE1967	61.03462 )	( 1523	RA 1	19SE1967	0.14760 )	( 1526	MQ 1	20SE1967	1C.65028 )
( 1527	TR 1	20SE1967	2.71698 )	( 1529	KW 1	20SE1967	1.00731 )	( 1530	FR 1	24SE1967	47.84477 )
( 1531	GH 1	25SE1967	38.14032 )	( 1545	WL 1	20C1967	20.00134 )	( 1548	CA 1	3CC1967	7.53085 )
( 1549	MQ 1	40C1967	21.04974 )	( 1551	ES 1	5CC1967	8.56298 )	( 1552	SM 1	6CC1967	16.05809 )
( 1550	MR 1	5CC1967	2.57713 )	( 1553	SG 1	6CC1967	21.50410 )	( 1428	MU 2	29MY1967	71.72460 )
( 1426	MS 2	29MY1967	1.85827 )	( 1351	MI 2	21AP1967	0.01862 )	( 1427	LU 2	29MY1967	10.07264 )
( 1417	HO 2	22MY1967	4.90504 )	( 1418	SH 2	22MY1967	1.24417 )	( 1350	EH 2	19AP1967	37.07407 )
( 1401	MO 2	6MY1967	0.02352 )	( 1402	TR 2	6MY1967	0.01083 )	( 1353	FR 2	23AP1967	C.18987 )
( 1354	GH 2	25AP1967	3.42453 )	( 1429	WL 2	29MY1967	28.70792 )	( 1403	CA 2	10MY1967	C.32693 )
( 1404	PQ 2	10MY1967	27.64227 )	( 1405	ES 2	12MY1967	1.85758 )	( 1407	SM 2	14MY1967	3.72604 )
( 1349	CI 2	19AP1967	0.02155 )	( 1406	GR 2	13MY1967	9C.06065 )	( 1420	IH 2	23MY1967	C.27190 )
( 1421	CH 2	23MY1967	0.19084 )	( 1422	GA 2	23MY1967	C.03065 )	( 1423	WA 2	25MY1967	C.00856 )
( 1430	MC 2	12JN1967	0.04935 )	(							

*Melosira granulata* fo. *spiralis* Grun.

*Melosira* (*granulata*?) var. *spiralis* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 87, figs. 20-22. 1882.

Cells curved in the perivalvar, forming lax spiral colonies. Other morphologic features, including pleomorphic ornamentation, essentially similar to the nominate variety.

Our collections of this entity mostly come from highly eutrophied environments.

#### 335 MEGRANEC TOT NO OF STATIONS 22

( 46744	EV	60C1937	0.00975 )	( 1454	E 5	15JL1967	C.28006 )	( 1511	E 2	1SE1967	C.05218 )
( 1512	E 3	1SE1967	0.00785 )	( 1536	E 2	24SE1967	0.07635 )	( 1541	E 2	11OC1967	C.01064 )
( 1542	E 3	11OC1967	C.01017 )	( 1356	GS20	13MY1967	C.00592 )	( 1555	GS 2	30C1967	C.01059 )
( 1558	GS 5	40C1967	0.00793 )	( 1573	GS21	60C1967	C.02240 )	( 1544	MU 1	20C1967	7.05316 )
( 1520	HD 1	18SE1967	3.77198 )	( 1521	SH	18SE1967	0.14424 )	( 1522	BH 1	18SE1967	C.87526 )
( 1531	GH 1	25SE1967	0.85376 )	( 1545	WL 1	20C1967	0.01136 )	( 1549	MQ 1	40C1967	C.02741 )
( 1428	MU 2	29MY1967	0.77134 )	( 1417	HO 2	22MY1967	0.01495 )	( 1429	WL 2	29MY1967	C.06370 )
( 1406	GB 2	13MY1967	C.90578 )	(							

*Melosira granulata* var. *angustissima* O. Müll.

*Melosira granulata* var. *angustissima* O. Müller, Hedwigia, 38:315, pl. 12, fig. 28. 1899.

Cells elongate-cylindrical, only 3-6µ in diameter. Length of the perivalvar axis more than 5 times the diameter of the valve. Other features of the morphology and ornamentation of the frustule essentially similar to the nominate variety.

#### 336 MEGRANVA TCT NO OF STATIONS 152

( 46910	CH	CC1945	0.00546 )	( 46921	CH	23NO1945	C.00194 )	( 46914	CH	19AP1946	C.00214 )
( 46924	CH	10MY1946	0.00212 )	( 46923	CH	22NO1946	0.01311 )	( 46916	CH	4MY1947	C.00407 )
( 46907	CH	JL1947	0.00099 )	( 46922	CH	21AU1947	C.00291 )	( 46750	EV	24SE1937	C.32992 )
( 46744	EV	60C1937	0.13656 )	( 1232	E 5	16MY1964	0.00696 )	( 1233	B 3	5JN2964	0.33340 )
( 1236	C* 1	8JN1964	0.29931 )	( 1237	C* 2	8JN1964	C.60325 )	( 1241	E 2	13JN1964	C.06653 )
( 1247	B 3	14JL1964	0.00854 )	( 1248	B 3	24JL1964	0.00985 )	( 1249	C 3	8JL1964	C.01086 )
( 1251	C 7	16JL1964	0.00579 )	( 1252	C* 1	16JL1964	C.03626 )	( 1253	C* 2	16JL1964	C.01366 )
( 1254	D 2	15JL1964	0.02681 )	( 1256	E 2	14JL1964	C.04030 )	( 1257	E 3	14JL1964	C.00479 )
( 1261	B 3	2AU1964	0.00785 )	( 1264	C* 1	10AU1964	1.35156 )	( 1265	C* 2	10AU1964	0.01341 )
( 1266	D 3	18AU1964	0.01403 )	( 1268	E 2	15AU1964	0.00547 )	( 1272	C* 1	10SE1964	C.11082 )
( 1273	C* 2	10SE1964	0.01613 )	( 1274	D 1	17SE1964	C.01408 )	( 1275	D 2	17SE1964	C.09677 )
( 1277	D 4	18SE1964	0.01239 )	( 1279	E 1	16SE1964	0.29057 )	( 1280	E 2	16SE1964	C.05446 )
( 1284	E 6	17SE1964	0.02224 )	( 1286	F 2	15SE1964	0.02189 )	( 1288	B 3	15OC1964	2.89521 )
( 1445	B 6	14OC1964	0.01957 )	( 1290	C* 1	16OC1964	0.10612 )	( 1291	C* 2	16OC1964	C.00245 )
( 1292	D 1	15OC1964	0.00373 )	( 1294	D 3	15OC1964	0.00330 )	( 1297	D 6	14OC1964	0.00190 )
( 1298	E 1	12OC1964	0.03770 )	( 1259	E 2	12OC1964	0.09739 )	( 1300	E 3	13OC1964	C.00112 )
( 1302	E 5	13OC1964	0.02024 )	( 1303	E 6	13OC1964	C.00075 )	( 1305	F 2	11OC1964	0.00690 )
( 1306	F 3	11OC1964	0.00554 )	( 1308	C 7	6NO1964	C.01217 )	( 1309	C* 1	10NC1964	C.00965 )
( 1316	D 6	9NO1964	C.00756 )	( 1317	E 1	6NC1964	0.00574 )	( 1318	E 2	7NC1964	C.01712 )
( 1319	E 3	7NO1964	0.00524 )	( 1320	E 4	7NO1964	C.01241 )	( 1321	E 5	7NC1964	0.00319 )
( 1322	E 6	7NO1964	0.01666 )	( 1323	F 1	6NC1964	0.00557 )	( 1337	C 3	2MR1967	C.01176 )
( 1338	C 3	28MR1967	0.00793 )	( 1340	C 7	28MR1967	0.00436 )	( 1341	A 3	19AP1967	C.12475 )
( 1342	A 4	19AP1967	0.34288 )	( 1346	C 7	21AP1967	0.00267 )	( 1348	E 5	23AP1967	C.00137 )
( 1408	A 3	23MY1967	0.01785 )	( 1411	C 3	31MY1967	C.00821 )	( 1412	C 5	31MY1967	C.00642 )
( 1432	A 4	13JN1967	0.02299 )	( 1433	C 3	17JN1967	0.11626 )	( 1436	E 2	15JN1967	C.00724 )
( 1446	A 3	11JL1967	C.94173 )	( 1447	A 4	11JL1967	0.01403 )	( 1451	C 7	16JL1967	C.00197 )
( 1452	E 2	14JL1967	0.52157 )	( 1454	E 5	15JL1967	C.03001 )	( 1506	A 6	29AU1967	C.01046 )
( 1508	C 3	25SE1967	0.00400 )	( 1511	E 2	15JL1967	0.05525 )	( 1532	A 6	18SE1967	C.05090 )
( 1533	A 4	19SE1967	0.03714 )	( 1534	A 6	19SE1967	0.29163 )	( 1535	C 7	20SE1967	C.00966 )
( 1536	E 2	24SE1967	0.11180 )	( 1537	E 3	24SE1967	0.06469 )	( 1538	E 5	23SE1967	C.01105 )
( 1539	C 3	40C1967	1.17742 )	( 1541	E 2	11OC1967	0.10643 )	( 1542	E 3	11OC1967	C.01017 )
( 1387	GS11	12MY1967	0.00792 )	( 1388	GS12	12MY1967	0.05430 )	( 1389	GS13	12MY1967	C.22746 )
( 1391	GS15	12MY1967	0.01915 )	( 1392	GS16	12MY1967	C.09554 )	( 1393	GS17	13MY1967	C.01096 )
( 1394	GS18	13MY1967	0.01376 )	( 1395	GS19	13MY1967	C.08220 )	( 1396	GS20	13MY1967	3.62547 )

( 1397	GS21	13MY1967	0.08308 )	( 1554	GS 1	30C1967	0.14943 )	( 1556	GS 3	30C1967	C.01043 )
( 1558	GS 5	40C1967	0.00396 )	( 1560	GS 8	40C1967	C.02361 )	( 1561	GS 9	40C1967	C.01174 )
( 1563	GS11	50C1967	0.00468 )	( 1564	GS12	50C1967	C.19587 )	( 1565	GS13	50C1967	C.02535 )
( 1566	GS14	50C1967	0.05723 )	( 1567	GS15	50C1967	0.06510 )	( 1568	GS16	50C1967	1.41412 )
( 1569	GS17	50C1967	0.13973 )	( 1571	GS19	60C1967	C.13698 )	( 1572	GS20	60C1967	C.12618 )
( 1573	GS21	60C1967	1.01912 )	( 1574	GS22	60C1967	C.04890 )	( 1575	GS28	60C1967	C.38706 )
( 1544	MU 1	20C1967	4.42252 )	( 1547	MS 1	20C1967	0.16766 )	( 1520	HO 1	18SE1967	14.86162 )
( 1521	SH 1	18SE1967	3.23102 )	( 1522	BH 1	18SE1967	1.77969 )	( 1523	RA 1	15SE1967	C.01845 )
( 1526	MO 1	20SE1967	1.09234 )	( 1527	TR 1	20SE1967	0.08176 )	( 1529	KW 1	20SE1967	C.02398 )
( 1530	FR 1	24SE1967	4.80048 )	( 1531	GH 1	25SE1967	19.07016 )	( 1545	WL 1	20C1967	C.23650 )
( 1548	CA 1	30C1967	0.05088 )	( 1549	MQ 1	40C1967	0.78114 )	( 1551	ES 1	50C1967	C.41537 )
( 1552	SM 1	60C1967	0.20469 )	( 1550	MR 1	50C1967	1.44963 )	( 1553	SG 1	60C1967	1.29260 )
( 1428	MU 2	29MY1967	8.87041 )	( 1426	MS 2	29MY1967	0.66142 )	( 1427	LU 2	29MY1967	0.30266 )
( 1417	HO 2	22MY1967	1.07677 )	( 1418	SH 2	22MY1967	0.38880 )	( 1399	PW 2	5MY1967	C.01360 )
( 1402	TR 2	6MY1967	0.03249 )	( 1354	GH 2	25AP1967	0.09839 )	( 1429	WL 2	29MY1967	5.43582 )
( 1403	CA 2	10MY1967	0.05231 )	( 1404	MC 2	10MY1967	2.03252 )	( 1405	ES 2	12MY1967	C.36120 )
( 1407	SM 2	14MY1967	0.01194 )	( 1406	GB 2	13MY1967	C.56072 )	(			

*Melosira granulata* var. *angustissima* fo. *curvata* (Grun.)

*Melosira granulata* var. *curvata* Grunow in: Van Heurck, Syn. Diat.  
Belgique, pl. 87, fig. 18. 1882.

Cells bent in the perivalvar axis, forming lax spiral colonies. Other morphologic features essentially similar to var. *angustissima*.

Both of the above entities are found in abundance only in eutrophied portions of Lake Michigan. *M. granulata* var. *angustissima* fo. *curvata* seems to occur only under highly eutrophic conditions and may represent a response of the previous variety to such conditions.

337 MEGRVAFC TOT NO OF STATIONS 10

( 1396	GS20	13MY1967	0.03330 )	( 1568	GS16	50C1967	0.00289 )	( 1544	MU 1	20C1967	C.53375 )
( 1522	BH 1	18SE1967	0.40845 )	( 1531	GH 1	25SE1967	0.99746 )	( 1428	MU 2	29MY1967	C.00301 )
( 1417	HO 2	22MY1967	0.02243 )	( 1350	BH 2	19AP1967	1.05725 )	( 1429	WL 2	29MY1967	C.11679 )
( 1406	GB 2	13MY1967	0.24801 )	(							

*Melosira granulata* var. *muzzanensis* (Meist.) Bethge

*Melosira muzzanensis* Meister, Kryptog.-Fl. Schweiz, 4(1):41, pl. 1,  
fig. 10. 1912.

*Melosira granulata* var. *muzzanensis* (Meist.) Bethge, Pflanzenforsch.,  
3:32. 1925.

In this entity the perivalvar axis of cells is much shorter than in the nominate variety, height of the valve mantle only 4-8 $\mu$ . This variety is apparently not polymorphic and all observed specimens are finely structured. Other morphologic features essentially similar to the nominate variety.

This entity occurs occasionally but always in low abundance in our collections from Lake Michigan. Its taxonomic status is somewhat questionable in that it does not show the polymorphism characteristic of the other varieties of this taxon. It should be pointed out that post-auxospore valves of *M. islandica* have similar length to width ratios.

338 MEISLAVA TOT NO OF STATIONS 65

(46914	CH	19AP1966	0.00214 )	(46924	CH	10MY1966	0.00282 )	(46906	CH	MY1967	C.00531 )
( 1251	C 7	16JL1964	0.00579 )	( 1254	D 2	15JL1964	0.01341 )	( 1255	D 5	15JL1964	C.01027 )
( 1257	E 3	14JL1964	0.00957 )	( 1281	E 3	16SE1964	C.00785 )	( 1341	A 3	19AP1967	C.00868 )
( 1342	A 4	19AP1967	0.01444 )	( 1344	C 3	25AP1967	0.02151 )	( 1345	C 5	25AP1967	C.00975 )
( 1346	C 7	21AP1967	0.01068 )	( 1347	E 2	23AP1967	0.00650 )	( 1348	E 5	23AP1967	C.00548 )
( 1368	A 3	4MY1967	0.08797 )	( 1369	A 4	4MY1967	C.04846 )	( 1370	A 6	3MY1967	0.00691 )
( 1371	C 3	4MY1967	0.34858 )	( 1372	C 5	5MY1967	0.06029 )	( 1373	C 7	5MY1967	C.13121 )
( 1374	E 2	7MY1967	0.00598 )	( 1375	E 3	7MY1967	C.01925 )	( 1376	E 5	6MY1967	C.01687 )
( 1408	A 3	23MY1967	0.01789 )	( 1409	A 4	23MY1967	0.05356 )	( 1410	A 6	24MY1967	C.04511 )
( 1411	C 3	31MY1967	0.03282 )	( 1412	C 5	31MY1967	0.04630 )	( 1413	C 7	25MY1967	C.02527 )
( 1414	E 2	28MY1967	0.10411 )	( 1415	E 3	28MY1967	0.07870 )	( 1416	E 5	28MY1967	C.00875 )
( 1432	A 4	13JN1967	0.01533 )	( 1433	C 3	17JN1967	0.08397 )	( 1434	C 5	17JN1967	C.06580 )
( 1435	C 7	13JN1967	0.03473 )	( 1436	E 2	15JN1967	0.02171 )	( 1437	E 3	15JN1967	C.47103 )
( 1438	E 5	14JN1967	0.06173 )	( 1446	A 3	11JL1967	C.00978 )	( 1449	C 3	16JL1967	C.06496 )
( 1511	E 2	1SE1967	0.00614 )	( 1512	E 3	1SE1967	0.00393 )	( 1537	E 3	24SE1967	C.01725 )
( 1538	E 5	23SE1967	0.01105 )	( 1377	GS 1	9MY1967	0.05937 )	( 1380	GS 4	9MY1967	C.01009 )
( 1382	GS 6	10MY1967	0.02220 )	( 1384	GS 8	10MY1967	0.01109 )	( 1385	GS 9	10MY1967	0.00942 )
( 1386	GS10	12MY1967	0.01149 )	( 1387	GS11	12MY1967	0.02376 )	( 1388	GS12	12MY1967	C.01810 )
( 1389	GS13	12MY1967	0.00516 )	( 1394	GS18	13MY1967	0.00344 )	( 1397	GS21	13MY1967	C.00292 )
( 1398	GS22	14MY1967	C.00911 )	( 1567	GS15	5CC1967	0.01111 )	( 1569	GS17	50C1967	C.00257 )
( 1428	MU 2	29MY1967	0.00603 )	( 1426	MS 2	29MY1967	0.02100 )	( 1400	SB 2	6MY1967	C.01191 )
( 1422	GA 2	23MY1967	C.01022 )	( 1424	KN 2	25MY1967	0.02665 )	(			

*Melosira islandica* O. Müll.

*Melosira islandica* O. Müller, Jahrb. wissench. Bot., 43:56, pl. 1, figs. 3-6. 1906.

Cells cylindrical, joined by the valve faces into long, closely appressed filamentous colonies. Individual valves of specimens from Lake Michigan 8-30 $\mu$  in diameters, 7-21 $\mu$  high (valve mantle). Pseudosulcus little developed, apparent only as a narrow, sharply-angled indentation. Sulcus a shallow furrow with an internal thickening intruding into the interior of the cell. Neck short, in optical section more or less bowl-shaped. Degree of silicification and ornamentation of the frustule highly variable. Ornamentation of the valve surface consists of numerous, randomly arranged, small areolae. The margin of the valve is usually furnished with a corona of very small and inconspicuous spines. Ornamentation of the valve mantle is pleomorphic. In all cases the elements are arranged in rows running parallel to the pervalvar axis. The following types of ornamentation may be found:

Status  $\alpha$ : Ornamentation of the valve mantle consisting of rows of coarse, circular areolae. Areolae rows 10-12 in 10 $\mu$  with 12-13 areolae in 10 $\mu$  within the individual rows. Frustules are heavily silicified.

Status  $\beta$ : Both finely and coarsely areolate frustules found in the same colony.

Status  $\delta$ : Ornamentation of the valve mantle consisting of fine circular areolae. Areolae rows 13-16 in 10 $\mu$  with 14-18 areolae in 10 $\mu$  within the rows.

This species is usually abundant and often dominant in spring collections from Lake Michigan. Populations from the offshore waters have usually been referred to *M. islandica* subsp. *helvetica* O. Müll. In the material that we have examined we can find no justification for the sub-specific designation for specimens from Lake Michigan. The populations of variable morphology grade together to the extent that any separation is entirely artificial. It appears that environmental conditions determine the degree of silicification to at least a certain degree as collections from the eutrophied portions of the lake contain only coarsely structured specimens. Auxospore populations are common and post-auxospore cells usually are characterized by much foreshortened pervalvar axes.

339 MEISLAVH TOT NO OF STATIONS 311

(60973	CH	1876	3.61360	)	( 3540	CH	11MY1879	8.61948	)	( 3541	CH	1FE1881	5.92781	)
( 3507	CH	19FE1881	4.75436	)	(46921	CH	23NO1945	0.00194	)	(46908	CH	DE1945	0.46324	)
(46917	CH	12JA1946	0.18021	)	(46915	CH	20FE1946	1.84943	)	(46914	CH	19AP1946	38.55402	)
(46924	CH	10MY1946	51.40315	)	(46923	CH	22NO1946	0.08305	)	(46920	CH	20DE1946	0.13033	)
(46905	CH	JA1947	1.07611	)	(46909	CH	MR1947	12.13515	)	(46912	CH	AP1947	25.41106	)
(46916	CH	4MY1947	1.03653	)	(46906	CH	MY1947	14.84018	)	(46919	CH	5JUN1947	C.19727	)
(46907	CH	JL1947	0.80131	)	(46913	CH	6AU1947	0.26148	)	(46922	CH	21AU1947	C.37802	)
(46758	EV	5JUN1937	34.34846	)	(46771	EV	11JUN1937	50.72511	)	(46743	EV	20JUN1937	20.86151	)
(46745	EV	3JUL1937	0.18809	)	(46770	EV	9JUL1937	0.03578	)	(46764	EV	17JUL1937	2.25624	)
(46757	EV	25JUL1937	2.25166	)	(46747	EV	1AU1937	2.91111	)	(46763	EV	23AUG1937	1.03490	)
(46769	EV	7SEP1937	0.04342	)	(46752	EV	15SEP1937	0.06530	)	(46760	EV	22SEP1937	C.02462	)
(46744	EV	6OC1937	0.23410	)	(46748	EV	13OC1937	78.30913	)	(46747	EV	27OC1937	C.05029	)
(46749	EV	12MR1938	27.86745	)	(46768	EV	16MR1938	58.03322	)	(46762	EV	18MR1938	2.82311	)
(46751	EV	30MR1938	56.58775	)	(46772	EV	18AP1938	61.80269	)	(46756	EV	27AP1938	41.84225	)
(46759	EV	19MY1938	80.35110	)	(46761	EV	27MY1938	36.93448	)	(46766	EV	14DE1938	C.14259	)
( 1223	B 3	18MY1964	75.91217	)	( 1224	B 4	18MY1964	62.89383	)	( 1225	C 6	15MY1964	57.35005	)
( 1226	C 7	16MY1964	43.68340	)	( 1227	C* 2	13MY1964	41.60544	)	( 1228	D 2	14MY1964	58.03928	)
( 1229	D 5	14MY1964	43.66580	)	( 1230	E 2	16MY1964	54.76366	)	( 1231	E 3	16MY1964	72.42441	)
( 1232	E 5	16MY1964	51.13220	)	( 1233	B 3	5JUN1964	29.17291	)	( 1234	B 3	18JUN1964	16.72852	)
( 1235	C 7	16JUN1964	7.90804	)	( 1439	B 6	5JUN1964	43.91608	)	( 1236	C* 1	8JUN1964	30.01819	)
( 1237	C* 2	8JUN1964	30.31708	)	( 1238	D 3	11JUN1964	77.70000	)	( 1239	C 4	11JUN1964	55.31766	)
( 1240	D 6	10JUN1964	37.12444	)	( 1241	E 2	13JUN1964	60.79486	)	( 1242	E 3	13JUN1964	68.12157	)
( 1243	E 6	13JUN1964	48.52585	)	( 1244	F 1	11JUN1964	11.20577	)	( 1245	F 2	11JUN1964	13.06964	)
( 1246	F 3	11JUN1964	17.15173	)	( 1247	B 3	14JUL1964	21.81242	)	( 1248	B 3	24JUL1964	17.24205	)
( 1440	B 6	11JUL1964	21.66783	)	( 1441	B 6	24JUL1964	44.40625	)	( 1249	C 3	8JUL1964	34.22052	)
( 1250	C 6	10JUL1964	42.87769	)	( 1251	C 7	16JUL1964	6.28657	)	( 1252	C* 1	16JUL1964	11.12971	)

( 1253	C* 2	16JUL1964	38.82143 )	( 1254	C 2	15JUL1964	54.29994 )	( 1255	U 5	15JUL1964	38.44771 )
( 1256	E 2	14JUL1964	60.01318 )	( 1257	E 3	14JUL1964	64.14642 )	( 1258	F 1	6JUL1964	12.38879 )
( 1259	F 2	6JUL1964	20.60605 )	( 1260	F 3	6JUL1964	17.78175 )	( 1261	B 3	2AUL1964	3.98383 )
( 1262	B 3	17AUL1964	6.32087 )	( 1442	B 6	2AUL1964	18.15079 )	( 1443	B 6	16AUL1964	19.09619 )
( 1263	C 7	15AUL1964	3.36269 )	( 1264	C* 1	10AUL1964	10.13670 )	( 1265	C* 2	10AUL1964	5.47694 )
( 1266	D 3	18AUL1964	20.13469 )	( 1267	D 6	18AUL1964	0.65716 )	( 1268	E 2	15AUL1964	32.93576 )
( 1269	E 3	15AUL1964	35.49306 )	( 1270	F 1	10AUL1964	4.38393 )	( 1444	B 6	19SE1964	17.61192 )
( 1271	C 7	22SE1964	0.91402 )	( 1272	C* 1	10SE1964	8.90695 )	( 1273	C* 2	10SE1964	5.40911 )
( 1274	D 1	17SE1964	7.22564 )	( 1275	D 2	17SE1964	5.41900 )	( 1276	D 3	18SE1964	15.55743 )
( 1277	D 4	18SE1964	5.20511 )	( 1278	D 6	18SE1964	2.15227 )	( 1279	E 1	16SE1964	7.14650 )
( 1280	E 2	16SE1964	53.37326 )	( 1281	E 3	16SE1964	29.39214 )	( 1282	E 4	16SE1964	8.53186 )
( 1283	E 5	16SE1964	24.88660 )	( 1284	E 6	17SE1964	4.89308 )	( 1285	F 1	15SE1964	4.68814 )
( 1286	F 2	15SE1964	9.96060 )	( 1287	F 3	15SE1964	6.30504 )	( 1288	B 3	15OC1964	0.36571 )
( 1445	B 6	14OC1964	0.83496 )	( 1289	C 7	14OC1964	0.67719 )	( 1290	C* 1	16OC1964	0.07580 )
( 1291	C* 2	16OC1964	0.34245 )	( 1292	D 1	15OC1964	0.71929 )	( 1293	D 2	15OC1964	0.30186 )
( 1294	D 3	15OC1964	1.05767 )	( 1295	D 4	15OC1964	1.39137 )	( 1296	D 5	14CC1964	0.75933 )
( 1297	D 6	14OC1964	4.53143 )	( 1298	E 1	12CC1964	0.29082 )	( 1299	E 2	12OC1964	3.95853 )
( 1300	E 3	13OC1964	5.76338 )	( 1301	E 4	13OC1964	11.12779 )	( 1302	E 5	13CC1964	4.81820 )
( 1303	E 6	13OC1964	7.83611 )	( 1304	F 1	11CC1964	0.57789 )	( 1305	F 2	11OC1964	0.21909 )
( 1306	F 3	11OC1964	0.27163 )	( 1307	B 6	NO1964	0.80820 )	( 1308	C 7	6NO1964	0.46838 )
( 1309	C* 1	10NO1964	0.00322 )	( 1310	C* 2	10NO1964	0.08163 )	( 1311	D 1	8NO1964	0.00774 )
( 1312	D 2	8NO1964	0.29179 )	( 1313	C 3	9NO1964	0.22973 )	( 1314	D 4	9NO1964	0.55407 )
( 1315	D 5	9NO1964	0.57780 )	( 1316	D 6	9NO1964	1.58658 )	( 1317	E 1	6NC1964	0.00574 )
( 1318	E 2	7NO1964	0.44518 )	( 1319	E 3	7NO1964	1.09568 )	( 1320	E 4	7NO1964	0.66598 )
( 1321	E 5	7NO1964	0.33518 )	( 1322	E 6	7NO1964	0.77982 )	( 1323	F 1	6NO1964	0.24390 )
( 1324	F 2	6NO1964	0.44554 )	( 1325	F 3	6NO1964	0.35265 )	( 1336	C 3	27JA1967	2.23494 )
( 1337	C 3	28MR1967	53.49872 )	( 1338	C 3	28MR1967	51.46242 )	( 1339	C 5	28MR1967	49.10519 )
( 1340	C 7	28MR1967	56.24677 )	( 1341	A 3	19AP1967	55.05353 )	( 1342	A 4	19AP1967	48.38214 )
( 1343	A 6	19AP1967	42.21233 )	( 1344	C 3	25AP1967	66.82108 )	( 1345	C 5	25AP1967	47.75548 )
( 1346	C 7	21AP1967	68.32413 )	( 1347	E 2	23AP1967	58.84074 )	( 1348	E 5	23AP1967	56.23029 )
( 1368	A 3	4MY1967	52.56047 )	( 1369	A 4	4MY1967	73.05527 )	( 1370	A 6	3MY1967	64.12704 )
( 1371	C 3	4MY1967	67.22379 )	( 1372	C 5	5MY1967	62.06554 )	( 1373	C 7	5MY1967	76.67293 )
( 1374	E 2	7MY1967	59.20502 )	( 1375	E 3	7MY1967	61.98416 )	( 1376	E 5	6MY1967	36.20418 )
( 1408	A 3	23MY1967	32.86678 )	( 1409	A 4	23MY1967	49.57448 )	( 1410	A 6	24MY1967	46.17726 )
( 1411	C 3	31MY1967	54.28137 )	( 1412	C 5	31MY1967	63.64171 )	( 1413	C 7	25MY1967	72.30627 )
( 1414	E 2	28MY1967	63.94626 )	( 1415	E 3	28MY1967	68.30957 )	( 1416	E 5	28MY1967	57.86263 )
( 1431	A 3	12JN1967	34.42593 )	( 1432	A 4	13JN1967	52.03329 )	( 1433	C 3	17JN1967	18.08551 )
( 1434	C 5	17JN1967	65.52817 )	( 1435	C 7	13JN1967	55.25211 )	( 1436	E 2	15JN1967	49.85868 )
( 1437	E 3	15JN1967	69.71173 )	( 1438	E 5	14JN1967	68.88162 )	( 1446	A 3	11JUL1967	21.06661 )
( 1447	A 4	11JUL1967	22.10422 )	( 1448	A 6	10JUL1967	0.17330 )	( 1449	C 3	16JUL1967	24.07428 )
( 1450	C 5	16JUL1967	35.58983 )	( 1451	C 7	16JUL1967	8.81855 )	( 1452	E 2	14JUL1967	11.17640 )
( 1453	F 3	15JUL1967	51.31056 )	( 1454	E 5	15JUL1967	2.66053 )	( 1504	A 3	28AUL1967	4.14764 )
( 1505	A 4	28AUL1967	3.96784 )	( 1508	C 3	2SE1967	5.31532 )	( 1509	C 5	25E1967	15.78398 )
( 1510	C 7	29AUL1967	1.77047 )	( 1511	E 2	1SE1967	5.58676 )	( 1512	E 3	1SE1967	12.64332 )
( 1513	E 5	31AUL1967	4.25661 )	( 1532	A 3	18SE1967	0.45991 )	( 1533	A 4	19SE1967	0.77987 )
( 1534	A 6	19SE1967	0.01861 )	( 1535	C 7	20SE1967	0.22532 )	( 1536	E 2	24SE1967	4.19516 )
( 1537	E 3	24SE1967	9.96291 )	( 1538	E 5	23SE1967	6.18682 )	( 1539	C 3	4OC1967	0.02013 )
( 1540	C 5	4OC1967	0.63037 )	( 1541	E 2	11OC1967	1.61779 )	( 1542	E 3	11CC1967	0.78316 )
( 1543	E 5	10CC1967	0.50280 )	( 1377	GS 1	9MY1967	59.01443 )	( 1378	GS 2	9MY1967	33.85054 )
( 1379	GS 3	9MY1967	17.11438 )	( 1380	GS 4	9MY1967	16.24347 )	( 1381	GS 5	10MY1967	22.87363 )
( 1382	GS 6	10MY1967	48.18340 )	( 1383	GS 7	10MY1967	33.30838 )	( 1384	GS 8	10MY1967	45.30214 )
( 1385	GS 9	10MY1967	35.10625 )	( 1386	GS10	12MY1967	46.85434 )	( 1387	GS11	12MY1967	33.82445 )
( 1388	GS12	12MY1967	25.76169 )	( 1389	GS13	12MY1967	7.40015 )	( 1390	GS14	12MY1967	13.97534 )
( 1391	GS15	12MY1967	17.09523 )	( 1392	GS16	12MY1967	14.23860 )	( 1393	GS17	13MY1967	16.87486 )
( 1394	GS18	13MY1967	4.57563 )	( 1395	GS19	13MY1967	3.37036 )	( 1396	GS20	13MY1967	0.82868 )
( 1397	GS21	13MY1967	1.09881 )	( 1398	GS22	14MY1967	27.20345 )	( 1554	GS 1	30C1967	10.95851 )
( 1555	GS 2	30C1967	2.96610 )	( 1556	GS 3	30C1967	1.22021 )	( 1557	GS 4	30C1967	6.27803 )
( 1558	GS 5	40C1967	2.08102 )	( 1559	GS 7	40C1967	5.87536 )	( 1560	GS 8	40C1967	8.26524 )
( 1561	GS 9	40C1967	9.86089 )	( 1562	GS10	50C1967	16.57867 )	( 1563	GS11	50C1967	7.20198 )
( 1564	GS12	50C1967	0.02798 )	( 1565	GS13	50C1967	0.03549 )	( 1566	GS14	50C1967	0.64208 )
( 1567	GS15	50C1967	0.61127 )	( 1568	GS16	50C1967	0.65656 )	( 1569	GS17	50C1967	0.34784 )
( 1570	GS18	50C1967	0.63467 )	( 1571	GS19	60C1967	0.00410 )	( 1573	GS21	60C1967	0.03024 )
( 1574	GS22	60C1967	3.02019 )	( 1575	GS28	60C1967	0.04129 )	( 1547	PS 1	20C1967	2.29940 )
( 1524	MI 1	20SE1967	0.04378 )	( 1546	LU 1	20C1967	0.02001 )	( 1520	HO 1	18SE1967	0.75440 )
( 1523	RA 1	19SE1967	0.00923 )	( 1526	MO 1	20SE1967	0.71685 )	( 1527	TR 1	20SE1967	0.15723 )
( 1528	SB 1	20SE1967	0.21658 )	( 1529	KW 1	20SE1967	0.81545 )	( 1530	FR 1	24SE1967	0.84008 )
( 1531	GH 1	25SE1967	0.05072 )	( 1545	WL 1	20C1967	0.06081 )	( 1548	CA 1	30C1967	0.03816 )
( 1549	MQ 1	40C1967	0.78114 )	( 1551	ES 1	50C1967	0.03195 )	( 1552	SM 1	60C1967	0.25091 )
( 1550	MR 1	50C1967	0.09912 )	( 1553	SG 1	60C1967	0.14689 )	( 1428	MU 2	29MY1967	0.14764 )
( 1426	MS 2	29MY1967	6.71916 )	( 1351	MI 2	21AP1967	31.08145 )	( 1427	LU 2	29MY1967	15.37045 )
( 1417	HO 2	22MY1967	4.42650 )	( 1418	SH 2	22MY1967	3.23484 )	( 1350	BH 2	19AP1967	0.96676 )
( 1425	RA 2	25MY1967	29.84705 )	( 1299	PW 2	5MY1967	58.92491 )	( 1401	MO 2	6MY1967	50.79962 )
( 1402	TR 2	6MY1967	50.76889 )	( 1400	SB 2	6MY1967	48.79675 )	( 1352	KW 2	21AP1967	15.92784 )
( 1353	FR 2	23AP1967	6.58228 )	( 1354	GH 2	25AP1967	7.45663 )	( 1429	WL 2	29MY1967	0.20172 )
( 1403	CA 2	10MY1967	16.11089 )	( 1404	MQ 2	10MY1967	8.13008 )	( 1405	ES 2	12MY1967	1.44479 )
( 1407	SM 2	14MY1967	3.53496 )	( 1349	CI 2	19AP1967	44.42847 )	( 1419	BU 2	23MY1967	16.40424 )
( 1420	IH 2	23MY1967	10.39275 )	( 1421	CH 2	23MY1967	18.04301 )	( 1422	GA 2	23MY1967	15.04113 )
( 1424	KN 2	25MY1967	27.28484 )	( 1430	MC 2	12JN1967	0.04935 )	(			

*Melosira italica* subsp. *subartica* O. Mull.

*Melosira italica* subsp. *subartica* O. Müller, Jahrb. Wiss. Bot., 43:78,  
pl. 2, figs. 7-11. 1906.

Cells cylindrical, joined by the valve faces into long, more or less closely appressed colonies. Individual valves of specimens from Lake Michigan 7-15 $\mu$  in diameter, 5-20 $\mu$  high (valve mantle). Valve mantle parallel, valve surface flat or only slightly convex. Pseudosulcus very small, not apparent. Sulcus moderately deeply incised, forming a broad angle, with a conspicuous internal thickening extending into the lumen of the cell. Neck very short and poorly defined. Degree of silicification of the valve mantle variable, usually moderately strong. Ornamentation of the valve surface is comprised of very fine, irregularly arranged puncta with elongate, ray-like puncta at the margins. The margin of the valve surface is furnished with a corona of small species. Ornamentation of the valve mantle comprised of spiral rows of fine, usually more or less elongate, puncta. This species is somewhat pleomorphic but does not exhibit the pronounced structural differences found in other members of the genus. Strongly silicified forms ( $\alpha$  status) with about 18 striae in 10 $\mu$  and the same number of puncta in 10 $\mu$  within the striae. Weakly silicified forms ( $\beta$  status) with about 20 striae in 10 $\mu$  and about 22 puncta in 10 $\mu$  within the rows.

This entity occurs sporadically in our collections from Lake Michigan. It is common in a number of habitats surrounding the lake, and the populations we have encountered are perhaps derived from tributaries to the lake which became established in the open waters.

#### 340 METALLIC TCI NC CF STATIONS 172

(46908	CH	DE1945	C.05035 )	(46914	CH	19AP1946	0.00214 )	(46905	CH	JA1947	C.00368 )
(46909	CH	MR1947	0.00455 )	(46906	CH	MY1947	C.00066 )	(1223	B 3	18MY1964	C.00156 )
(1224	B 4	18MY1964	0.10979 )	(1225	C 6	15MY1964	C.00784 )	(1226	C 7	16MY1964	C.01522 )
(1227	C 2	13MY1964	0.01645 )	(1228	D 2	14MY1964	0.34061 )	(1229	D 5	14MY1964	C.08881 )
(1230	E 2	16MY1964	0.21633 )	(1231	E 3	16MY1964	0.03180 )	(1232	E 5	16MY1964	C.24349 )
(1439	B 6	5JN1964	0.01399 )	(1236	C 1	8JN1964	0.01225 )	(1237	C 2	8JN1964	G.04640 )
(1238	D 3	11JN1964	0.09600 )	(1239	D 4	11JN1964	0.00464 )	(1240	D 6	10JN1964	0.02148 )
(1241	E 2	13JN1964	0.07836 )	(1242	E 3	13JN1964	0.14837 )	(1243	E 6	13JN1964	C.03758 )
(1244	F 1	11JN1964	0.00548 )	(1245	F 2	11JN1964	0.01383 )	(1246	F 3	11JN1964	0.03586 )
(1440	B 6	11JL1964	0.00369 )	(1250	C 6	10JL1964	0.02878 )	(1254	D 2	15JL1964	C.00575 )
(1255	D 5	15JL1964	0.00513 )	(1256	E 2	14JL1964	0.06412 )	(1257	E 3	14JL1964	0.06939 )
(1259	F 2	6JL1964	0.00310 )	(1260	F 3	6JL1964	0.00764 )	(1262	B 3	17AU1964	C.00630 )
(1268	E 2	15AU1964	0.00547 )	(1269	F 3	15AU1964	C.09319 )	(1270	F 1	10AU1964	C.00272 )
(1281	E 3	16SE1964	0.01570 )	(1297	D 6	14OC1964	C.00190 )	(1299	E 2	12OC1964	C.00314 )
(1300	E 3	13OC1964	0.01074 )	(1301	E 4	13OC1964	0.00442 )	(1304	F 1	11OC1964	C.00988 )
(1317	E 1	6NO1964	0.00574 )	(1320	E 4	7NO1964	0.00414 )	(1321	E 5	7NO1964	C.00958 )
(1322	E 6	7NO1964	C.01000 )	(1336	C 3	27JA1967	0.19641 )	(1337	C 3	28MR1967	4.62970 )
(1338	C 3	28MR1967	2.96187 )	(1339	C 5	28MR1967	4.80140 )	(1340	C 7	28MR1967	1.47616 )
(1341	A 3	19AP1967	1.51872 )	(1342	A 4	19AP1967	1.51589 )	(1343	A 6	15AP1967	C.12158 )
(1344	C 3	25AP1967	1.27388 )	(1345	C 5	25AP1967	7.50443 )	(1346	C 7	21AP1967	1.68240 )
(1347	E 2	23AP1967	6.71490 )	(1348	E 5	23AP1967	1.91912 )	(1368	A 3	4MY1967	3.29877 )
(1369	A 4	4MY1967	3.65276 )	(1370	A 6	3MY1967	0.60536 )	(1371	C 3	4MY1967	4.84787 )
(1372	C 5	5MY1967	4.96524 )	(1373	C 7	5MY1967	3.99338 )	(1374	E 2	7MY1967	4.18410 )
(1375	E 3	7MY1967	6.40054 )	(1376	E 5	6MY1967	0.98381 )	(1408	A 3	23MY1967	1.56508 )
(1409	A 4	23MY1967	4.99911 )	(1410	A 6	24MY1967	0.51308 )	(1411	C 3	31MY1967	1.72322 )
(1412	C 5	31MY1967	5.89275 )	(1413	C 7	25MY1967	3.31680 )	(1414	E 2	28PY1967	1.17548 )
(1415	E 3	28MY1967	5.82363 )	(1416	E 5	28MY1967	1.68383 )	(1431	A 3	12JN1967	C.02084 )
(1432	A 4	13JN1967	5.90068 )	(1433	C 3	17JN1967	1.80855 )	(1434	C 5	17JN1967	5.65259 )
(1435	C 7	13JN1967	0.88403 )	(1436	E 2	15JN1967	7.85208 )	(1437	E 3	15JN1967	4.14502 )
(1438	E 5	14JN1967	2.16049 )	(1446	A 3	11JL1967	C.42806 )	(1447	A 4	11JL1967	C.32747 )
(1448	A 6	10JL1967	0.02829 )	(1449	C 3	16JL1967	1.73870 )	(1450	C 5	16JL1967	2.53261 )
(1451	C 7	16JL1967	0.06693 )	(1452	E 2	14JL1967	0.48537 )	(1453	E 3	15JL1967	13.26997 )
(1454	E 5	15JL1967	0.01600 )	(1504	A 3	28AU1967	0.01481 )	(1506	A 6	29AU1967	C.01046 )
(1509	C 5	2SE1967	0.31796 )	(1511	E 2	1SE1967	0.06139 )	(1512	E 3	1SE1967	3.02340 )
(1513	E 5	31AU1967	0.02534 )	(1532	A 3	18SE1967	0.02957 )	(1534	A 6	19SE1967	C.00620 )
(1535	C 7	20SE1967	0.00644 )	(1536	E 2	24SE1967	C.04090 )	(1537	E 3	24SE1967	0.83240 )
(1538	E 5	23SE1967	0.09391 )	(1539	C 3	40C1967	C.03019 )	(1541	E 2	11OC1967	C.35381 )
(1542	E 3	11OC1967	0.47803 )	(1377	GS 1	9MY1967	6.64951 )	(1378	GS 2	9MY1967	C.63496 )
(1379	GS 3	9MY1967	0.12998 )	(1380	GS 4	9MY1967	C.23541 )	(1381	GS 5	10MY1967	C.36493 )
(1382	GS 6	10MY1967	0.97144 )	(1383	GS 7	10MY1967	0.53464 )	(1384	GS 8	10MY1967	C.77641 )
(1385	GS 9	10MY1967	C.76758 )	(1386	GS10	12MY1967	2.61419 )	(1387	GS11	12MY1967	1.01394 )
(1388	GS12	12MY1967	1.03167 )	(1389	GS13	12MY1967	0.32746 )	(1390	GS14	12MY1967	C.24662 )
(1391	GS15	12MY1967	0.51717 )	(1392	GS16	12MY1967	C.09554 )	(1393	GS17	13MY1967	C.25586 )
(1394	GS18	13MY1967	C.11009 )	(1395	GS19	13MY1967	0.32882 )	(1396	GS20	13MY1967	C.00666 )
(1397	GS21	13MY1967	C.00589 )	(1398	GS22	14MY1967	2.33780 )	(1554	GS 1	30C1967	0.17790 )
(1555	GS 2	30C1967	0.01059 )	(1556	GS 3	30C1967	0.00521 )	(1562	GS10	50C1967	C.00987 )
(1563	GS11	50C1967	0.00468 )	(1567	GS15	50C1967	C.01746 )	(1568	GS16	50C1967	C.00144 )
(1569	GS17	50C1967	0.01189 )	(1570	GS18	50C1967	0.00992 )	(1571	GS19	60C1967	C.00059 )
(1574	CS22	60C1967	0.00863 )	(1526	MO 1	20SE1967	C.00569 )	(1528	SB 1	20SE1967	C.01444 )
(1549	MQ 1	40C1967	0.01370 )	(1550	MR 1	50C1967	0.02478 )	(1428	PU 2	29MY1967	0.00301 )
(1426	MS 2	29MY1967	1.06037 )	(1351	MI 2	21AP1967	C.22964 )	(1427	LU 2	29MY1967	2.13075 )
(1417	HO 2	22MY1967	0.13085 )	(1425	RA 2	25MY1967	0.01768 )	(1399	PW 2	5MY1967	C.74129 )
(1401	MO 2	6MY1967	0.37041 )	(1462	TR 2	6MY1967	0.45484 )	(1400	SB 2	6MY1967	1.00071 )
(1352	KW 2	21AP1967	0.10308 )	(1353	FR 2	23AP1967	0.10549 )	(1354	GH 2	25AP1967	C.08976 )
(1429	WL 2	29MY1967	0.16987 )	(1403	CA 2	10MY1967	C.20923 )	(1405	ES 2	12MY1967	C.01290 )
(1407	SM 2	14MY1967	0.02388 )	(1349	CI 2	19AP1967	C.03233 )	(1419	BU 2	23MY1967	C.03662 )
(1421	CH 2	23MY1967	0.05205 )	(1422	GA 2	23MY1967	C.02044 )	(1423	WA 2	25MY1967	C.06423 )
(1424	KN 2	25MY1967	0.02665 )								

*Melosira undulata* (Ehr.) Kütz.

*Gaillonella undulata* Ehrenberg, Ber. Akad. Wiss. Berlin, 1840:17. 1840.

*Melosira undulata* (Ehr.) Kütz., Bacill., p. 54, pl. 2, fig. 9. 1844.

Cells cylindrical, joined by the valve faces into short, poorly adhering colonies. Individual valves of specimens from Lake Michigan 20-70 $\mu$  in diameter, 20-35 $\mu$  high (valve mantle). Valve mantles parallel, valve surfaces flat in the center, convex only at the margins, therefore forming a narrow and inconspicuous pseudosulcus. The sulcus and associated structures are entirely lacking. The walls of the frustule are of varying thickness, thin at the girdle margins, much thicker at the valve mantle, then becoming somewhat thinner again at the valve surface. As the outer margins of the valve mantle are straight and parallel, the variable thickness of the wall makes the inner surface appear undulate from which the name of the taxon is derived. The ornamentation of the valve mantle consists of straight, parallel rows of puncta, about 16 in 10 $\mu$ , with complex substructure and apparently subtended by chambers. A conspicuous corona of slime pores is present on the valve mantle about one-third of the distance between the valve surface and the girdle margin. These pores enter the interior of the frustule through a small nipple-like projection on the interior wall. Ornamentation of the valve surface consists of anastomosing radial striae of varying lengths having the same structure as the striae of the valve margin. A small, structureless, area is present at the center of the valve. In some specimens the ornamentation of the wall surface spirals around the midpoint.

This entity is very rare in plankton collections from Lake Michigan. It appears that the specimens found are derived from populations that exist in periphyton communities in relatively deep water (50<sup>+</sup>m). As Hustedt (1927) points out, the reported modern distribution of this species is primarily tropical, although it is present in tertiary deposits throughout central and northern Europe. Its occurrence in the deep waters of Lake Michigan is somewhat puzzling, although it should be pointed out that a morphologically very similar entity, *Cyclotella fottii* Hust. (Fott, 1935; Jurilj, 1954), has been reported from similar habitats in Lake Ohrid.

In life the colonies are attached to rocks or other solid substrates by slime strands arising from the pores of the terminal cell of the colony. Both the attachment to the substrate and the attachment of the cells to one another is tenuis so that individual free cells are often found.

Coll: 973.

*Melosira undulata* var. *normanii* Arnott ex V. H.

*Melosira undulata* var. *normanii* Arnott ex Van Heurck, Syn. Diat. Belgique, pl. 90, fig. 7. 1882.

In this entity the interior surface of the valve mantle is polygonal. The interior opening of the slime pores occurs at the angles of the polygon and the nipple-like structure surrounding the pore tends to be more highly developed than in the nominate variety. On the basis of the limited number of specimens we have observed from Lake Michigan it appears that the spiral arrangement of the valve ornamentation is more common in this entity than it is in the nominate variety, although both types of ornamentation are found in both taxa.

Very rare in plankton collections from Lake Michigan. It is suspected that the specimens observed are derived from deepwater periphyton communities. The reported distribution of this entity is more northern than that of the nominate variety (Hustedt 1927).

341 MEUNDUVM TCT NO OF STATIONS 2									
( 1573	GS21	60C1967	0.00112 )	( 1550	MR 1	50C1967	C.03717 )	(	

*Melosira varians* Ag.

*Melosira varians* Agardh, Syn. Alg., p. 78. 1817.

Cells cylindrical, joined by the valve faces into long, closely appressed colonies. Individual valves of specimens from Lake Michigan 10-33 $\mu$  in diameter, 8-13 $\mu$  high (valve mantle). Valve mantles parallel, valve surfaces only slightly convex, therefore forming an inconspicuous pseudosulcus. The sulcus and associated structures are entirely lacking in this species. The walls of the frustule are of similar thickness throughout. The ornamentation of both the valve surface and the valve mantle is composed of very fine puncta which can barely be resolved with the light microscope under optimum optical conditions. In normal preparations the wall appears homogeneous.

This species is occasionally found in nearshore plankton collections from Lake Michigan, especially in areas that have been appreciably eutrophied. Its reported distribution indicates that it reaches its greatest abundance in highly eutrophic waters. It apparently finds its primary habitat in benthic communities although it is not uncommon in the plankton of highly polluted lakes and streams.

342 MEVARIAN TOT NO OF STATIONS 28											
( 146762	EV	18MR1938	0.04411 )	( 1571	GS19	60C1967	0.00527 )	( 1544	MU 1	20C1967	C.00477 )
( 1547	MS 1	20C1967	0.03992 )	( 1546	LU 1	20C1967	C.01000 )	( 1520	HO 1	18SE1967	C.02829 )
( 1521	SH 1	18SE1967	1.10778 )	( 1522	BH 1	18SE1967	0.00365 )	( 1523	RA 1	19SE1967	C.02768 )
( 1526	MO 1	20SE1967	0.00569 )	( 1525	KW 1	20SE1967	0.01199 )	( 1530	FR 1	24SE1967	C.35003 )
( 1531	GH 1	25SE1967	2.97549 )	( 1550	MR 1	50C1967	1.58592 )	( 1428	MU 2	29MY1967	C.25310 )
( 1426	MS 2	29MY1967	0.66142 )	( 1427	LU 2	29MY1967	3.09527 )	( 1417	HO 2	22MY1967	C.03365 )
( 1418	SH 2	22MY1967	1.69518 )	( 1350	BH 2	19AP1967	C.15418 )	( 1401	PO 2	6MY1967	C.02940 )
( 1400	SB 2	6MY1967	0.00596 )	( 1354	GH 2	25AP1967	0.00690 )	( 1429	KL 2	29MY1967	C.14864 )
( 1406	GB 2	13MY1967	0.01617 )	( 1422	GA 2	23MY1967	0.05620 )	( 1423	WA 2	25MY1967	C.00428 )
( 1424	KN 2	25MY1967	0.02665 )	(							

#### Species *incertae sedis*

*Melosira* sp. #1.

343 MESPECOA TCT NO OF STATIONS 36											
( 1229	D 5	14MY1964	0.05921 )	( 1230	E 2	16MY1964	0.04149 )	( 1231	E 3	16MY1964	C.34243 )
( 1232	E 5	16MY1964	0.40697 )	( 1235	C 7	16JN1964	0.00565 )	( 1237	C* 2	8JN1964	0.00516 )
( 1241	E 2	13JN1964	0.00739 )	( 1242	E 3	13JN1964	C.00899 )	( 1257	E 3	14JL1964	C.00479 )
( 1262	B 3	17AU1964	0.00840 )	( 1281	E 3	16SE1964	0.00785 )	( 1346	C 7	21AP1967	C.00534 )
( 1370	A 6	3MY1967	0.09667 )	( 1372	C 5	5MY1967	C.02128 )	( 1375	E 3	7MY1967	C.00481 )
( 1416	E 5	28MY1967	0.01749 )	( 1435	C 7	13JN1967	0.00631 )	( 1450	C 5	16JL1967	C.00381 )
( 1512	E 3	1SE1967	0.01571 )	( 1537	E 3	24SE1967	0.02588 )	( 1379	GS 3	9MY1967	C.00619 )
( 1380	GS 4	9MY1967	0.01513 )	( 1381	GS 5	10MY1967	0.02147 )	( 1384	GS 8	10MY1967	C.00739 )
( 1385	GS 9	10MY1967	0.00942 )	( 1386	GS10	12MY1967	0.01724 )	( 1389	GS13	12MY1967	C.00774 )
( 1390	GS14	12MY1967	0.01174 )	( 1391	GS15	12MY1967	0.02873 )	( 1393	GS17	13MY1967	C.01096 )
( 1394	GS18	13MY1967	0.00172 )	( 1395	GS19	13MY1967	0.01644 )	( 1554	GS 1	30C1967	C.00712 )
( 1351	MI 2	21AP1967	0.01241 )	( 1401	MO 2	6MY1967	0.02352 )	( 1400	SB 2	6MY1967	C.10722 )

Genus *Meridion* Agardh  
Agardh, Syst. Alg., p. 14. 1824.

Members of the genus *Meridion* find their primary habitat in periphyton communities. Only occasional specimens are found in plankton collections from Lake Michigan and these are undoubtedly derived from shoreline sources.

*Meridion circulare* (Grev.) Agardh

*Echinella circularis* Greville, Mem. Vernerian Nat. Hist. Soc., 4:213, pl. 8, fig. 2. 1822.

*Meridion circulare* (Grev.) Agardh, Consp. Crit. Diat., pt. 3, p. 40. 1831.

344 MRCIRCUL TCT NO OF STATIONS 21											
( 46743	EV	20JN1937	0.00428 )	( 1341	A 3	19AP1967	0.00108 )	( 1348	E 5	23AP1967	C.00137 )
( 1394	GS18	13MY1967	0.00344 )	( 1569	GS17	50C1967	0.00297 )	( 1571	GS19	60C1967	C.00059 )
( 1544	MU 1	20C1967	0.00238 )	( 1522	BH 1	18SE1967	C.00365 )	( 1550	MR 1	5CC1967	C.02478 )
( 1426	MS 2	29MY1967	0.01050 )	( 1427	LU 2	29MY1967	0.01211 )	( 1417	HO 2	22MY1967	C.01122 )
( 1418	SH 2	22MY1967	0.03110 )	( 1350	BH 2	19AP1967	C.00881 )	( 1401	MG 2	6MY1967	C.00588 )
( 1400	SB 2	6MY1967	0.02383 )	( 1354	GH 2	25AP1967	0.00518 )	( 1403	CA 2	10MY1967	C.03923 )
( 1404	MQ 2	10MY1967	0.03811 )	( 1405	ES 2	12MY1967	C.00645 )	( 1407	SM 2	14MY1967	C.00597 )

*Meridion circulare* var. *constrictum* (Ralfs) V. H.

*Meridion constrictum* Ralfs, Annals Mag. Nat. Hist., 12:458, pl. 18, fig. 2. 1843.

*Meridion circulare* var. *constrictum* (Ralfs) Van Heurck, Syn. Diat. Belgique, p. 161, pl. 51, figs. 14-15. 1885.

345 MRCIRCVC TOT NO OF STATIONS 6											
( 1550	MR 1	50C1967	0.01239 )	( 1428	MU 2	29MY1967	0.00301 )	( 1350	BH 2	19AP1967	C.00220 )
( 1354	GH 2	25AP1967	0.01036 )	( 1404	MQ 2	10MY1967	0.02541 )	( 1405	ES 2	12MY1967	C.00645 )

Genus *Navicula* Bory  
Bory, Encyclop. Methodl., p. 562. 1824.

*Navicula* is by far the largest of the diatom genera occurring in fresh water. Its members occupy a diversity of habits ranging from terrestrial to occurrences in the plankton of large lakes. Probably none of the freshwater species is euplanktonic although a number are successful facultative planktons and are regularly noted in plankton collections, even those from off-shore areas.

*Navicula abiskoensis* Hust.

*Navicula abiskoensis* Hustedt, Arch. Hydrobiol., 39:118, fig. 36. 1942.

Coll: ANSP Schulze A70.

*Navicula aboensis* (Cleve) Hust.

*Navicula torneensis* var. *aboensis* Cleve, Acta Soc. Fauna Fl. Fennica, 8(2):33, pl. 2, fig. 7. 1891.

*Navicula aboensis* (Cleve) Hustedt, Bot. Not., 105:407, figs. 131-132. 1952.

Coll: 1800.



*Navicula acceptata* Hust.

*Navicula acceptata* Hustedt, Arch. Hydrobiol., 43:398, pl. 38, figs. 66-67.  
1950.

346 NAACCEPT TCT NO OF STATIONS 14											
( 3541	CH	1FE1881	0.00978 )	( 46768	EV	16MR1938	0.01470 )	( 1304	F 1	110C1964	0.00247 )
( 1305	F 2	110C1964	0.00345 )	( 1340	C 7	28MR1967	0.00073 )	( 1555	GS 2	30C1967	0.00353 )
( 1574	GS22	60C1967	0.00575 )	( 1544	MU 1	20C1967	0.00715 )	( 1546	LU 1	2CC1967	0.01000 )
( 1527	TR 1	20SE1967	0.01258 )	( 1529	KW 1	20SE1967	0.01199 )	( 1550	MR 1	50C1967	0.01239 )
( 1417	HQ 2	22MY1967	0.00374 )	( 1350	BH 2	19AP1967	0.00661 )	(			

*Navicula accomoda* Hust.

*Navicula accomoda* Hustedt, Arch. Hydrobiol., 43:446, pl. 39, figs. 17-18.  
1950.

347 NAACCEMM TCT NO OF STATIONS 1											
( 1350	BH 2	19AP1967	0.00220 )	(							

*Navicula ambigua* Ehr.

*Navicula ambigua* Ehrenberg, Abh. Akad. Wiss. Berlin, 1841:129, pl. 2,  
fig. II(9). 1843.

37C NACUSPVA TCT NO OF STATIONS 1											
( 1531	GH 1	25SE1967	0.00845 )	(							

*Navicula amphibola* var. *perrieri* Per. and Héríb.

*Navicula amphibola* var. *perrieri* Peragallo and Héribaude in: Héribaude, Foss.  
Diat. Auvergne, Pt. 1, p. 25, pl. 7, fig. 11. 1902.

Coll: ANSP Schulze A70.

*Navicula ampiceros* Kütz.

*Navicula ampiceros* Kützting, Bacill., p. 95, pl. 3, fig. 39. 1844.

Coll: 1056.

*Navicula anglica* Ralfs

*Navicula anglica* Ralfs in: Pritchard, Hist. Infus., 4th ed., p. 900. 1861.

348 NAANGLIC TCT NO OF STATIONS 16											
( 46921	CH	23ND1945	0.00065 )	( 46517	CH	12JA1946	0.00028 )	( 46920	CH	20DE1946	0.00092 )
( 46905	CH	JA1947	0.00123 )	( 46909	CH	MR1947	0.00455 )	( 46906	CH	MY1947	0.00066 )
( 46907	CH	JL1947	0.00099 )	( 46758	EV	5JN1937	0.02496 )	( 46764	EV	17JL1937	0.05641 )
( 46757	EV	25JL1937	0.00963 )	( 46747	EV	1AU1937	0.00495 )	( 46763	EV	23AU1937	0.04058 )
( 46752	EV	15SE1937	0.13061 )	( 46768	EV	16MR1938	0.01470 )	( 46762	EV	18MR1938	0.02206 )
( 46761	EV	27MY1938	0.00273 )	(							

349 NAANGLIQ TCT NO OF STATIONS 6											
( 46919	CH	5JN1947	0.00303 )	( 46522	CH	21AU1947	0.00097 )	( 46747	EV	1AU1937	0.00743 )
( 1566	GS14	50C1967	0.00183 )	( 1550	MR 1	50C1967	0.01239 )	( 1404	PQ 2	10MY1967	0.02541 )

*Navicula anglica* var. *signata* Hust.

*Navicula anglica* var. *signata* Hustedt, Ber. Deutsch Bot. Ges., 61(5):287,  
pl. 8, fig. 26. 1943.

## 350 NAANGLVS TCT NC CF STATIONS 19

(46915	CH	20FE1946	0.00569 )	(46758	EV	5JN1937	C.00357 )	(46747	EV	1AU1937	C.00248 )
(46760	EV	22SE1937	0.00492 )	(46767	EV	27OC1937	C.00387 )	( 1264	C* 1	10AU1964	C.00193 )
( 1304	F 1	11OC1964	0.00247 )	( 1388	GS12	12MY1967	C.00603 )	( 1565	GS13	50C1967	C.05578 )
( 1569	GS17	50C1967	0.00149 )	( 1546	LU 1	20C1967	0.00500 )	( 1521	SH 1	18SE1967	C.00577 )
( 1526	MO 1	20SE1967	0.00569 )	( 1527	TR 1	20SE1967	0.00629 )	( 1528	SB 1	20SE1967	C.01444 )
( 1545	WL 1	20C1967	0.01351 )	( 1417	HO 2	22MY1967	0.00374 )	( 1403	CA 2	10MY1967	C.01308 )
( 1423	WA 2	25MY1967	0.00428 )	(							

*Navicula anglica* var. *subsalsa* (Grun.) Cleve

*Navicula timida* var. *subsalsa* Grunow, Verh. Zool.-Bot. Ges. Wien, 10:537, pl. 4, fig. 43b. 1860.

*Navicula anglica* var. *subsalsa* (Grun.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 27(3):22. 1895.

## 351 NAANGLVA TCT NC CF STATIONS 2

(46758	EV	5JN1937	0.00357 )	(46757	EV	25JL1937	0.00481 )	(			
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*Navicula angusta* Grun.

*Navicula angusta* Grunow, Verh. Zool.-Bot. Ges. Wien, 10:528, pl. 5, fig. 19. 1860.

## 497 NASPECCT TOT NO OF STATIONS 4

(46770	EV	9JL1937	0.00596 )	(46766	EV	14DE1938	0.01584 )	( 1536	E 2	24SE1967	0.00273 )
( 1394	GS18	13MY1967	0.00172 )	(							

*Navicula aurora* Sov.

*Navicula aurora* Sovereign, Trans. American Micr. Soc., 77(2):120, pl. 3, figs. 29-31. 1958.

## 352 NAAURORA TCT NO OF STATIONS 13

(46920	CH	20DE1946	0.00031 )	(46758	EV	5JN1937	0.00357 )	(46771	EV	11JN1937	C.00238 )
(46764	EV	17JL1937	0.00806 )	(46757	EV	25JL1937	0.00963 )	(46747	EV	1AU1937	C.00248 )
(46760	EV	22SE1937	0.00492 )	(46762	EV	18MR1938	C.02206 )	(46756	EV	27AP1938	C.00168 )
( 1427	LU 2	25MY1967	0.01211 )	( 1400	SB 2	6MY1967	C.00596 )	( 1404	MQ 2	10MY1967	C.01270 )
( 1405	ES 2	12MY1967	0.00645 )	(							

*Navicula bacillum* Ehr.

*Navicula bacillum* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:418, pl. 4(5), fig. 8. 1843.

## 353 NABACILL TCT NC CF STATIONS 6

(46758	EV	5JN1937	0.00357 )	(46757	EV	25JL1937	C.00481 )	(46747	EV	1AU1937	C.00495 )
(46750	EV	24SE1937	0.00471 )	( 1392	GS16	12MY1967	0.00308 )	( 1565	GS13	50C1967	C.01014 )

*Navicula balcanica* Hust.

*Navicula balcanica* Hustedt, Arch. Hydrobiol., 40:928, pl. 40, figs. 12-15. 1945.

## 354 NABALCAN TCT NO OF STATIONS 29

(46910	CH	0C1945	0.00218 )	(46521	CH	23NO1945	C.00129 )	(46915	CH	20FE1946	0.00569 )
(46914	CH	15AP1946	0.00107 )	(46524	CH	10MY1946	C.00071 )	(46923	CH	22NO1946	C.00437 )
(46920	CH	20DE1946	0.00062 )	(46909	CH	MR1947	0.00911 )	(46916	CH	4MY1947	C.00034 )
(46506	CH	MY1947	0.00066 )	(46507	CH	JL1947	C.00148 )	(46922	CH	21AU1947	C.00242 )
(46758	EV	5JN1937	0.24249 )	(46743	EV	20JN1937	0.00428 )	(46770	EV	9JL1937	C.00596 )
(46764	EV	17JL1937	0.13655 )	(46757	EV	25JL1937	0.02889 )	(46747	EV	1AU1937	0.02723 )
(46763	EV	23AU1937	0.12175 )	(46765	EV	30AU1937	0.01115 )	(46752	EV	15SE1937	C.04354 )
(46760	EV	22SE1937	0.00985 )	(46750	EV	24SE1937	0.02828 )	(46767	EV	27OC1937	C.01160 )
(46749	EV	12MR1938	0.01214 )	(46762	EV	18MR1938	0.13233 )	(46761	EV	27MY1938	C.00273 )
(46766	EV	14DE1938	C.01584 )	( 1544	MU 1	20C1967	0.00238 )	(			

*Navicula bryophila* Peters.

*Navicula bryophila* Petersen, Bot. Iceland, Vol. 2, p. 388, fig. 13. 1928.

355 NABRYCPH TCT NO OF STATIONS 4											
(46917	CH	12JAI1946	0.00028 )	( 1285	F 1	15SE1964	0.01165 )	( 1346	C 7	21AP1967	C.00134 )
( 1350	BH 2	19AP1967	0.00441 )	(							

*Navicula capitata* Ehr.

*Navicula capitata* Ehrenberg, Infusionsthierchen, p. 185, pl. 13, fig. 20. 1838.

356 NACAPITA TCT NO OF STATIONS 18											
(46759	EV	19MY1938	0.00338 )	( 1236	C* 1	8JN1964	0.00175 )	( 1274	D 1	17SE1964	0.00465 )
( 1279	E 1	16SE1964	0.00785 )	( 1286	F 2	15SE1964	0.01095 )	( 1341	A 3	19AP1967	C.00108 )
( 1521	SH 1	18SE1967	0.01154 )	( 1526	MO 1	20SE1967	0.00569 )	( 1531	GH 1	25SE1967	C.00845 )
( 1550	MR 1	50C1967	0.03717 )	( 1426	MS 2	29MY1967	0.02100 )	( 1417	HO 2	22MY1967	C.00374 )
( 1418	SH 2	22MY1967	0.03110 )	( 1350	BH 2	19AP1967	0.01982 )	( 1402	TR 2	6MY1967	C.01083 )
( 1352	KW 2	21AP1967	0.00859 )	( 1407	SM 2	14MY1967	0.00597 )	( 1406	CB 2	13MY1967	C.00270 )

*Navicula capitata* var. *hungarica* (Grun.) Ross

*Navicula hungarica* Grunow, Verh. Zool.-Bot. Ges. Wien, 10:539, pl. 3, fig. 30. 1860.

*Navicula capitata* var. *hungarica* (Grun.) Ross, Natl. Mus. Canada Bull., 97(2):192. 1947.

357 NACAPIVH TCT NO OF STATIONS 3											
(46743	EV	20JN1937	0.00856 )	( 1253	C* 2	16JL1964	C.00228 )	( 1550	MR 1	50C1967	C.01239 )

*Navicula capitata* var. *luneburgensis* (Grun.) Patr.

*Navicula hungarica* var. *luneburgensis* Grunow in: Mojsisovics and Neumayer, Beitr. Paläont. Österreich-Ungarns, Vol. 2, pt. 4, p. 156, pl. 30, figs. 43-44. 1882.

*Navicula capitata* var. *luneburgensis* (Grun.) Patrick in: Patrick and Reimer, Acad. Nat. Sci. Philadelphia Monogr., 13:537, pl. 52, fig. 4. 1966.

358 NACAPIVL TCT NO OF STATIONS 25											
(46915	CH	20FE1946	0.01138 )	(46514	CH	19AP1946	0.00107 )	(46909	CH	MR1947	C.00455 )
(46922	CH	21AU1947	0.00097 )	(46764	EV	17JL1937	0.00806 )	( 1270	F 1	10AU1964	C.00272 )
( 1275	D 2	17SE1964	0.00645 )	( 1345	C 5	25AP1967	0.00195 )	( 1346	C 7	21AP1967	C.00134 )
( 1374	E 2	7MY1967	0.00299 )	( 1388	GS12	12MY1967	0.01207 )	( 1561	ES 9	40C1967	C.00587 )
( 1565	GS13	50C1967	0.18254 )	( 1574	GS22	60C1967	0.00575 )	( 1546	LU 1	20C1967	C.02001 )
( 1920	HO 1	18SE1967	0.00943 )	( 1527	TR 1	20SE1967	0.00629 )	( 1550	MR 1	50C1967	C.02478 )
( 1428	MO 2	29MY1967	0.00301 )	( 1354	GH 2	25AP1967	0.00173 )	( 1403	CA 2	10MY1967	C.01308 )
( 1349	CI 2	19AP1967	0.00359 )	( 1420	IH 2	23MY1967	0.01511 )	( 1421	CH 2	23MY1967	C.01735 )
( 1423	WA 2	25MY1967	0.00428 )	(							

*Navicula capsa* Hohn

*Navicula capsa* Hohn, Trans. American Micr. Soc., 80(2):161, pl. 1, fig. 20. 1961.

454 NASBACIL TCT NO OF STATIONS 6											
(46919	CH	5JN1947	0.00152 )	(46764	EV	17JL1937	0.00806 )	(46763	EV	23AU1937	C.02029 )
( 1350	BH 2	19AP1967	0.22907 )	( 1401	MC 2	6MY1967	0.00588 )	( 1404	MQ 2	10MY1967	C.01270 )

*Navicula caroliniana* Patr.

*Navicula caroliniana* Patrick, Proc. Acad. Nat. Sci. Philadelphia, 111:107, pl. 7, fig. 11. 1959.

Coll: 1741.

*Navicula certa* Hust.

*Navicula certa* Hustedt, Arch. Hydrobiol., 40(4):924, pl. 42, figs. 2-3. 1945.

359 NACERTA TCT NO OF STATIONS 6											
( 1545	WL 1	20C1967	0.00676 )	( 1550	MR 1	50C1967	0.01239 )	( 1426	PS 2	29MY1967	C.01050 )
( 1351	MI 2	21AP1967	0.00310 )	( 1350	BH 2	19AP1967	0.00220 )	( 1404	MQ 2	10MY1967	C.01270 )

*Navicula clementis* Grun.

*Navicula clementis* Grunow in: Mojsisovics and Neumayer, Beitr. Paläont. Österreich-Ungarns, Vol. 2, pt. 4, p. 144, pl. 30, fig. 52. 1882.

361 NACLOIDC TCT NO OF STATIONS 2											
( 1388	GS12	12MY1967	0.00603 )	( 1527	TR 1	20SE1967	C.00629 )				

*Navicula clementis* var. *linearis* Bander

*Navicula clementis* var. *linearis* Bander ex Hustedt in: A. Schmidt, Atlas Diat., pl. 403, fig. 43. 1936.

360 NACLEPVL TCT NO OF STATIONS 2											
( 1550	MR 1	50C1967	0.01235 )	( 1428	MU 2	29MY1967	C.00301 )				

*Navicula clementis* var. *quadristigmata* Mang.

*Navicula clementis* var. *quadristigmata* Manguin, Rev. Algol., Nouv. Sér., 5(4):274, pl. 2 (J. pl. 27), fig. 2. 1961.

456 NASCLEME TCT NO OF STATIONS 2											
( 46920	CH	20DE1946	0.00062 )	( 46767	EV	27OC1937	0.00387 )				

*Navicula cocconeiformis* Greg.

*Navicula cocconeiformis* Gregory ex Greville, Annals Mag. Nat. Hist., Ser. 2, 15:256, pl. 9, fig. 6. 1855.

362 NACOCCECN TCT NO OF STATIONS 5											
( 1565	GS13	50C1967	0.02028 )	( 1549	MQ 1	40C1967	0.01370 )	( 1550	MR 1	50C1967	C.01239 )
( 1553	SG 1	60C1967	0.00734 )	( 1407	SM 2	14MY1967	0.00597 )				

*Navicula confervacea* (Kütz.) Grun.

*Diadesmis confervacea* Kützting, Bacill., p. 109, pl. 30, fig. 8. 1844.  
*Navicula confervacea* (Kütz.) Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 14, fig. 36. 1880.

363 NACONFER TCT NO OF STATIONS 2											
( 1550	MR 1	50C1967	0.04956 )	( 1350	BH 2	15AP1967	0.00441 )				

*Navicula costulata* Grun.

*Navicula costulata* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):27. 1880.

364 NACOSTUL ICT NC OF STATICS 30

(46921	CH	23NO1945	0.00517 )	(46517	CH	12JA1946	0.00055 )	(46924	CH	10MY1946	C.00635 )
(46923	CH	22NO1946	0.00874 )	(46520	CH	20DE1946	C.00062 )	(46909	CH	MR1947	C.00911 )
(46916	CH	4MY1947	0.00238 )	(46519	CH	5JN1947	0.00607 )	(46907	CH	JL1947	0.00148 )
(46922	CH	21AU1947	0.00582 )	(46758	EV	5JN1937	0.05349 )	(46743	EV	20JN1937	C.01285 )
(46745	EV	3JL1937	0.02090 )	(46764	EV	17JL1937	0.01612 )	(46757	EV	25JL1937	C.02407 )
(46747	EV	1AU1937	0.02722 )	(46763	EV	23AU1937	C.01046 )	(46752	EV	15SE1937	C.08707 )
(46750	EV	24SE1937	0.01885 )	(46744	EV	6CC1937	C.00488 )	(46748	EV	13CC1937	C.04270 )
(46767	EV	27CC1937	0.00774 )	(46749	EV	12MR1938	C.02427 )	(46768	EV	16MR1938	C.05880 )
(46762	EV	18MR1938	0.06617 )	(46751	EV	30MR1938	0.01117 )	(46756	EV	27AP1938	C.00168 )
(46759	EV	19MY1938	0.01013 )	(46761	EV	27MY1938	C.00545 )	(1274	D 1	17SE1964	C.00469 )

*Navicula cryptocephala* Kütz.

*Navicula cryptocephala* Kützling, Bacill., p. 95, pl. 3, figs. 20, 26. 1844.

365 NACRYPTC ICT NC OF STATICS 35

(46915	CH	20FE1946	0.00569 )	(46506	CH	MY1947	0.00066 )	(46752	EV	15SE1937	C.02177 )
(46744	EV	60CC1937	0.00975 )	(1240	D 6	10JN1964	C.00307 )	(1241	E 2	13JN1964	0.00148 )
(1533	A 4	19SE1967	0.00464 )	(1387	GS11	12MY1967	C.00792 )	(1389	GS13	12MY1967	C.00516 )
(1392	GS16	12MY1967	0.00308 )	(1354	GS18	13MY1967	0.00172 )	(1397	GS21	13MY1967	C.00196 )
(1558	GS 5	40CC1967	0.00396 )	(1562	GS10	5CC1967	C.00247 )	(1565	GS13	50CC1967	C.01521 )
(1571	GS19	60CC1967	C.00059 )	(1575	GS28	6CC1967	C.00129 )	(1546	LU 1	2CC1967	C.00500 )
(1522	BH 1	18SE1967	0.00365 )	(1527	TR 1	20SE1967	0.00629 )	(1530	FR 1	24SE1967	C.16002 )
(1531	GH 1	25SE1967	0.01691 )	(1545	WL 1	2CC1967	0.03379 )	(1550	MR 1	50CC1967	C.09912 )
(1553	SG 1	60CC1967	0.00734 )	(1427	LU 2	29MY1967	0.01211 )	(1417	FC 2	22MY1967	C.00748 )
(1350	BH 2	15AP1967	0.07048 )	(1401	MO 2	6MY1967	C.01764 )	(1402	TR 2	6MY1967	C.00541 )
(1400	SB 2	6MY1967	0.00596 )	(1352	KW 2	21AP1967	0.00859 )	(1354	GH 2	25AP1967	0.00173 )
(1404	MO 2	10MY1967	0.01270 )	(1407	SM 2	14MY1967	0.00557 )	(			

*Navicula cryptocephala* var. *intermedia* Grun.

*Navicula cryptocephala* var. *intermedia* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 8, fig. 10. 1880.

366 NACRYPVI ICT NC OF STATICS 27

(46762	EV	18MR1938	0.02206 )	(1534	A 6	19SE1967	C.00620 )	(1543	E 5	10CC1967	C.00718 )
(1383	GS 7	10MY1967	0.00267 )	(1388	GS12	12MY1967	C.00603 )	(1571	GS19	60CC1967	C.00059 )
(1573	GS21	6CC1967	0.00112 )	(1574	GS22	60CC1967	C.00575 )	(1544	MU 1	20CC1967	0.00477 )
(1547	MS 1	20CC1967	0.00798 )	(1522	BH 1	18SE1967	C.03465 )	(1526	MO 1	20SE1967	C.00569 )
(1545	WL 1	20CC1967	0.03379 )	(1551	ES 1	50CC1967	0.00799 )	(1552	SM 1	60CC1967	C.00660 )
(1550	MR 1	50CC1967	0.35931 )	(1426	MS 2	29MY1967	C.05249 )	(1351	MI 2	21AP1967	C.00621 )
(1417	HO 2	22MY1967	0.01122 )	(1418	SM 2	22MY1967	0.01555 )	(1350	BH 2	19AP1967	C.03524 )
(1401	MO 2	6MY1967	0.01176 )	(1402	TR 2	6MY1967	C.02707 )	(1400	SB 2	6MY1967	C.04765 )
(1354	GH 2	25AP1967	0.00173 )	(1407	SM 2	14MY1967	C.01791 )	(1406	GB 2	13MY1967	C.01078 )

*Navicula cryptocephala* var. *lancettula* (Schum.) Grun.

*Navicula lancettula* Schumann, Schrift. K. Phys.-Ökonom. Ges. Königsberg, 5:16, pl. 2, fig. 34. 1864.

*Navicula cryptocephala* var. *lancettula* (Schum.) Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 8, fig. 11. 1880.

367 NACRYPVI ICT NC OF STATICS 1

(1279 E 1 16SE1964 0.00393 ) (

*Navicula cryptocephala* var. *veneta* (Kütz.) Rabh.

*Navicula veneta* Kützling, Bacill., p. 95, pl. 30, fig. 76. 1844.

*Navicula cryptocephala* var. *veneta* (Kütz.) Rabenhorst, Fl. Europaea Alg., Sect. 1, p. 198. 1864.

368 NACRYPVV TCT NO OF STATIONS 27

( 46919 )	CH	5JN1947	0.00152 )	( 46750 )	EV	24SE1937	0.00471 )	( 46748 )	EV	13CC1937	0.02135 )
( 1344 )	C 3	25AP1967	0.00165 )	( 1346 )	C 7	21AP1967	0.00134 )	( 1348 )	E 5	23AP1967	0.00137 )
( 1382 )	GS 6	10MY1967	0.00278 )	( 1554 )	GS 1	3CC1967	0.00356 )	( 1558 )	GS 5	4CC1967	0.00396 )
( 1565 )	GS13	50C1967	0.00507 )	( 1574 )	GS22	60C1967	0.04315 )	( 1544 )	MU 1	20C1967	0.00238 )
( 1546 )	LV 1	20C1967	0.04502 )	( 1521 )	SH 1	18SE1967	0.00577 )	( 1526 )	MO 1	20SE1967	0.04551 )
( 1527 )	TR 1	20SE1967	0.22013 )	( 1528 )	SB 1	20SE1967	0.01444 )	( 1529 )	KW 1	20SE1967	0.08394 )
( 1530 )	FR 1	24SE1967	0.01000 )	( 1545 )	WL 1	20C1967	0.21623 )	( 1550 )	MR 1	50C1967	0.16107 )
( 1351 )	MI 2	21AP1967	0.00310 )	( 1350 )	BH 2	19AP1967	0.07929 )	( 1401 )	MO 2	6MY1967	0.01176 )
( 1400 )	SB 2	6MY1967	0.01191 )	( 1352 )	KW 2	21AP1967	0.00859 )	( 1407 )	SM 2	14MY1967	0.02986 )

*Navicula cuspidata* (Kütz.) Kütz.

*Frustulia cuspidata* Kütz., Linnaea, 8:549, pl. 4, fig. 26. 1833.

*Navicula cuspidata* (Kütz.) Kütz., Bacill., p. 94, pl. 3, figs. 24, 37. 1844.

369 NACUSPID TCT NO OF STATIONS 6

( 1287 )	F 3	15SE1964	0.00500 )	( 1369 )	A 4	4MY1967	0.00373 )	( 1572 )	GS20	60C1967	0.00090 )
( 1520 )	HO 1	18SE1967	0.00471 )	( 1417 )	HO 2	22MY1967	0.00374 )	( 1406 )	GB 2	13MY1967	0.00809 )

*Navicula cuspidata* var. *major* Meist.

*Navicula cuspidata* var. *major* Meister, Beitr. Kryptog.-Fl. Schweiz, 4(1):134, pl. 20, fig. 10. 1912.

371 NACUSPVM TCT NO OF STATIONS 1

( 1549 )	MO 1	4CC1967	0.01370 )	(
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*Navicula decussis* Østr.

*Navicula decussis* Østrup, Danske Diat., p. 77, pl. 2, fig. 50. 1910.

372 NADECUSS TOT NO OF STATIONS 62

( 46910 )	CH	0C1945	0.00109 )	( 46521 )	CH	23NO1945	0.00065 )	( 46917 )	CH	12JA1946	0.00055 )
( 46915 )	CH	20FE1946	0.01138 )	( 46514 )	CH	19AP1946	0.00320 )	( 46924 )	CH	10MY1946	0.00141 )
( 46923 )	CH	22NO1946	0.00874 )	( 46520 )	CH	20DE1946	0.00062 )	( 46909 )	CH	MR1947	0.01821 )
( 46916 )	CH	4MY1947	0.00102 )	( 46506 )	CH	MY1947	0.00133 )	( 46919 )	CH	5JN1947	0.00303 )
( 46907 )	CH	JL1947	0.00099 )	( 46522 )	CH	21AU1947	0.00145 )	( 46758 )	EV	5JN1937	0.03923 )
( 46743 )	EV	20JN1937	0.00428 )	( 46770 )	EV	9JL1937	0.01193 )	( 46764 )	EV	17JL1937	0.02417 )
( 46757 )	EV	25JL1937	0.03370 )	( 46747 )	EV	1AU1937	0.00990 )	( 46763 )	EV	23AU1937	0.12175 )
( 46765 )	EV	30AU1937	0.00558 )	( 46752 )	EV	15SE1937	0.04354 )	( 46760 )	EV	22SE1937	0.00492 )
( 46750 )	EV	24SE1937	0.01885 )	( 46744 )	EV	60C1937	0.00488 )	( 46748 )	EV	130C1937	0.02135 )
( 46745 )	EV	12MR1938	0.01214 )	( 46768 )	EV	16MR1938	0.04410 )	( 46751 )	EV	30MR1938	0.01117 )
( 46759 )	EV	19MY1938	0.00338 )	( 46761 )	EV	27MY1938	0.00545 )	( 1240 )	D 6	10JN1964	0.00153 )
( 1264 )	C* 1	10AU1964	0.00193 )	( 1341 )	A 3	19AP1967	0.00325 )	( 1504 )	A 3	28AU1967	0.00247 )
( 1540 )	C 5	4CC1967	0.00496 )	( 1541 )	E 2	110C1967	0.00532 )	( 1565 )	GS13	50C1967	0.00507 )
( 1574 )	GS22	60C1967	0.00288 )	( 1544 )	MU 1	20C1967	0.00238 )	( 1547 )	PS 1	20C1967	0.01597 )
( 1546 )	LU 1	20C1967	0.03001 )	( 1520 )	HO 1	18SE1967	0.00471 )	( 1521 )	SH 1	18SE1967	0.00577 )
( 1522 )	BH 1	18SE1967	0.02735 )	( 1527 )	TR 1	20SE1967	0.08176 )	( 1528 )	SB 1	20SE1967	0.04332 )
( 1530 )	FR 1	24SE1967	0.01000 )	( 1545 )	WL 1	20C1967	0.16893 )	( 1550 )	MR 1	50C1967	0.04956 )
( 1428 )	MU 2	25MY1967	0.00603 )	( 1426 )	MS 2	29MY1967	0.03150 )	( 1427 )	LU 2	29MY1967	0.03632 )
( 1417 )	HO 2	22MY1967	0.01122 )	( 1350 )	BH 2	19AP1967	0.08590 )	( 1399 )	PW 2	5MY1967	0.00680 )
( 1402 )	TR 2	6MY1967	0.00541 )	( 1352 )	KW 2	21AP1967	0.00859 )	( 1404 )	MQ 2	10MY1967	0.01270 )
( 1407 )	SM 2	14MY1967	0.00597 )	( 1422 )	GA 2	23MY1967	0.00511 )	(			

*Navicula diluviana* Krasske

*Navicula diluviana* Krasske, Zeitschr. Geschiebforsh., 9(2):90, pl. 2, figs. 2a-b, pl. 3. 1933.

374 NADILUVI TCT NO OF STATIONS 1

( 1388 )	GS12	12MY1967	0.00603 )	(
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*Navicula elginensis* (Greg.) Ralfs

*Pinnularia elginensis* Gregory, Quart. J. Micr. Sci., 4:9, pl. 1, fig. 33, 1856.

*Navicula elginensis* (Greg.) Ralfs in: Pritchard, Hist. Infusoria, 4th ed., p. 902. 1861.

375 NAEELGINE TCT NO OF STATIONS 1

( 1350 )	BH 2	19AP1967	0.00220 )	(
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*Navicula exigua* var. *capitata* Patr.

*Navicula exigua* var. *capitata* Patrick, Farlowia, 2(2):179, pl. 1, fig. 8. 1945.

377 NAEXIGVC TOT NO OF STATIONS 3											
( 1565	GS13	5CC1967	0.00507 )	( 1571	GS19	60C1967	0.00059 )	( 1527	TR 1	20SE1967	C.00629 )

*Navicula exiguaformis* Hust.

*Navicula exiguaformis* Hustedt, Arch. Hydrobiol., 40(4):929, pl. 42, figs. 21-22. 1945.

376 NAEXIGUI TOT NO OF STATIONS 26											
(46917	CH	12JA1946	0.00028 )	(46524	CH	10MY1946	C.00071 )	(46923	CH	22NO1946	C.00219 )
(46906	CH	MY1947	0.00066 )	(46758	EV	5JN1937	0.11768 )	(46743	EV	20JN1937	C.00428 )
(46770	EV	9JL1927	0.00596 )	(46764	EV	17JL1937	C.21757 )	(46757	EV	25JL1937	C.00963 )
(46747	EV	1AU1937	0.01485 )	(46763	EV	23AU1937	0.16234 )	(46752	EV	15SE1937	C.15237 )
(46750	EV	24SE1937	0.01885 )	(46748	EV	13CC1937	C.10675 )	(46767	EV	27OC1937	C.01547 )
(46768	EV	16MR1938	0.11760 )	(46762	EV	18MR1938	0.04411 )	(46751	EV	30MR1938	C.02233 )
( 1279	E 1	16SE1964	C.00393 )	( 1565	GS13	5CC1967	0.03549 )	( 1546	LU 1	20C1967	C.035C1 )
( 1522	BH 1	18SE1967	0.00182 )	( 1523	RA 1	19SE1967	0.00923 )	( 1527	TR 1	20SE1967	C.00629 )
( 1545	WL 1	2CC1967	0.01351 )	( 1350	BH 2	19AP1967	0.00220 )	(			

*Navicula explanata* Hust.

*Navicula explanata* Hustedt, Schweizerische Zeitschr. Hydrobiol., 11:207, fig. 7-8. 1948.

378 NAEXPLAN TOT NO OF STATIONS 13											
(46758	EV	5JN1937	0.00713 )	(46768	EV	16MR1938	0.01470 )	(46762	EV	18MR1938	C.04411 )
(46761	EV	27MY1938	0.00273 )	( 1386	GS10	12MY1967	0.00287 )	( 1388	GS12	12MY1967	C.01810 )
( 1389	GS13	12MY1967	0.00258 )	( 1394	GS18	13MY1967	0.00172 )	( 1565	GS13	50C1967	C.01014 )
( 1574	GS22	6CC1967	0.00575 )	( 1550	MR 1	50C1967	0.01239 )	( 1354	GH 2	25AP1967	C.00173 )
( 1404	MQ 2	10MY1967	0.01270 )	(							

*Navicula farta* Hust.

*Navicula farta* Hustedt, Bot. Not., 105:408. 1952.

379 NAFARIA TOT NO OF STATIONS 1											
( 1565	GS13	5CC1967	0.28395 )	(							

*Navicula fracta* Hust.

*Navicula fracta* Hustedt in: Rabenhorst, Kryptog.-Fl. Deutschlands, 7(2):1: 127, fig. 1259. 1961.

380 NAERACTE TOT NO OF STATIONS 6											
(46763	EV	23AU1937	0.02029 )	( 1300	E 3	130C1964	C.00358 )	( 1354	GS18	13MY1967	C.00172 )
( 1560	GS 8	40C1967	0.00472 )	( 1565	GS13	50C1967	0.00507 )	( 1422	GA 2	23MY1967	C.00511 )

*Navicula gastriformis* Hust.

*Navicula gastriformis* Hustedt in: A. Schmidt, Atlas Diat., pl. 398, figs. 17-19. 1934.

381 NAGASTRI TOT NO OF STATIONS 1											
( 1396	GS20	13MY1967	0.00074 )	(							

*Navicula gastrum* (Ehr.) Kütz.

*Pinnularia gastrum* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:421, pl. 3(7), fig. 23. 1843.

*Navicula gastrum* (Ehr.) Kütz., Bacill., p. 94, pl. 28, fig. 56. 1844.

## 382 NAGASTRU TCT NO OF STATIONS 23

( 46914 )	CH	19AP1946	0.00107 )	( 46520 )	CH	20DE1946	0.00031 )	( 46747 )	EV	1AU1937	C.00495 )
( 1244 )	F 1	11JN1964	0.00110 )	( 1257 )	E 3	14JL1964	0.00239 )	( 1272 )	C* 1	10SE1964	0.00410 )
( 1341 )	A 3	19AP1967	0.00108 )	( 1504 )	A 3	28AU1967	0.00247 )	( 1388 )	GS12	12MY1967	C.00603 )
( 1554 )	GS 1	30C1967	0.00356 )	( 1567 )	GS15	50C1967	0.00159 )	( 1570 )	GS18	50C1967	C.00992 )
( 1575 )	GS28	60C1967	0.00129 )	( 1520 )	HQ 1	18SE1967	C.00471 )	( 1522 )	BH 1	18SE1967	C.00547 )
( 1527 )	TR 1	20SE1967	0.01258 )	( 1530 )	FR 1	24SE1967	C.01000 )	( 1545 )	WL 1	20C1967	C.00676 )
( 1550 )	MR 1	50C1967	0.02478 )	( 1350 )	BH 2	19AP1967	C.01542 )	( 1402 )	TR 2	6MY1967	C.00541 )
( 1400 )	SB 2	6MY1967	0.00596 )	( 1407 )	SM 2	14MY1967	0.00597 )	( )			

*Navicula gastrum* var. *signata* Hust.

*Navicula gastrum* var. *signata* Hustedt in: A. Schmidt, Atlas Diat., pl. 403, figs. 27-28. 1936.

## 383 NAGASTVS TCT NO OF STATIONS 21

( 60973 )	CH	1876	0.04724 )	( 3540 )	CH	11MY1875	C.00466 )	( 46921 )	CH	23NC1945	C.00065 )
( 46917 )	CH	12JA1946	0.00055 )	( 46915 )	CH	20FE1946	0.01138 )	( 46914 )	CH	19AP1946	0.00107 )
( 46905 )	CH	JA1547	0.00490 )	( 46516 )	CH	4MY1547	C.00034 )	( 46919 )	CH	5JN1947	C.00303 )
( 46764 )	EV	17JL1937	0.00806 )	( 46747 )	EV	1AU1937	0.00743 )	( 46768 )	EV	16MR1938	C.01470 )
( 46762 )	EV	18MR1938	0.04411 )	( 46761 )	EV	27MY1938	C.00273 )	( 1279 )	E 1	16SE1964	C.00393 )
( 1565 )	GS13	50C1967	0.04562 )	( 1574 )	GS22	60C1967	0.00288 )	( 1520 )	HQ 1	18SE1967	C.00471 )
( 1526 )	HQ 1	20SE1967	0.01138 )	( 1527 )	TR 1	20SE1967	C.05031 )	( 1417 )	HQ 2	22MY1967	C.00374 )

*Navicula globosa* Meist.

*Navicula globosa* Meister, Ber. Schweizerische Bot. Ges., 44:89, fig. 8. 1934.

## 384 NAGLOBCC TCT NO OF STATIONS 4

( 1527 )	TR 1	20SE1967	0.00629 )	( 1350 )	BH 2	19AP1967	C.00220 )	( 1354 )	GH 2	25AP1967	C.00173 )
( 1404 )	HQ 2	10MY1967	0.03811 )	( )							

*Navicula gottlandica* Grun.

*Navicula gottlandica* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 8. fig. 8. 1880.

## 385 NAGOTTLA TCT NO OF STATIONS 2

( 1565 )	GS13	50C1967	0.07099 )	( 1404 )	HQ 2	10MY1967	C.01270 )	( )			
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*Navicula graciloides* A. Mayer

*Navicula graciloides* A. Mayer, Kryptog. Forsch., 1:203, pl. 7, fig. 60. 1919.

## 386 NAGRACIL TCT NO OF STATIONS 15

( 46763 )	EV	23AU1937	0.02029 )	( 1343 )	A 6	19AP1967	C.00069 )	( 1554 )	GS 1	30C1967	C.00712 )
( 1569 )	GS17	50C1967	0.00149 )	( 1571 )	GS19	60C1967	C.00059 )	( 1574 )	GS22	60C1967	C.01294 )
( 1544 )	HQ 1	20C1967	0.00238 )	( 1546 )	LU 1	20C1967	0.00500 )	( 1526 )	HQ 1	20SE1967	C.00569 )
( 1527 )	TR 1	20SE1967	0.01256 )	( 1529 )	Kk 1	20SE1967	C.01199 )	( 1549 )	HQ 1	4CC1967	C.01370 )
( 1350 )	BH 2	19AP1967	0.00661 )	( 1404 )	HQ 2	10MY1967	C.05081 )	( 1407 )	SM 2	14MY1967	C.00597 )

*Navicula gregaria* Donk.

*Navicula gregaria* Donkin, Quart. J. Micr. Sci., New Ser., 1:10, pl. 1, fig. 10. 1861.

## 387 NAGREGAR TCT NO OF STATIONS 19

( 1236 )	C* 1	8JN1964	0.00175 )	( 1264 )	C* 1	10AU1964	0.00193 )	( 1345 )	C 5	25AP1967	C.00195 )
( 1368 )	A 3	4MY1967	0.00314 )	( 1542 )	E 3	11OC1967	C.00509 )	( 1546 )	LU 1	20C1967	C.03001 )
( 1521 )	SH 1	18SE1967	0.02308 )	( 1522 )	BH 1	18SE1967	0.00365 )	( 1527 )	TR 1	20SE1967	C.01258 )
( 1531 )	GH 1	25SE1967	0.00845 )	( 1545 )	WL 1	20C1967	0.13514 )	( 1550 )	MR 1	50C1967	C.03717 )
( 1426 )	MS 2	29MY1967	0.06299 )	( 1427 )	LU 2	29MY1967	C.01211 )	( 1417 )	HQ 2	22MY1967	C.03365 )
( 1418 )	SH 2	22MY1967	0.03110 )	( 1350 )	BH 2	19AP1967	C.11013 )	( 1354 )	GH 2	25AP1967	C.00345 )
( 1429 )	WL 2	29MY1967	0.01062 )	( )							

*Navicula grimmei* Krasske

*Navicula grimmei* Krasske, Abh. Ber. Ver. Naturk. Cassel, 56:45, pl. 1, fig. 14. 1925.



388 NAGRIPME TCT NC CF STATIONS 5											
( 1567	GS15	50C1967	0.00159 )	( 1550	MR 1	50C1967	0.01239 )	( 1426	PS 2	29MY1967	C.04199 )
( 1350	BH 2	19AP1967	0.01542 )	( 1404	MC 2	10MY1967	0.01270 )	(			

*Navicula hambergii* Hust.

*Navicula hambergii* Hustedt in: Hamberg, Naturw. Untersuch. Sarekgebiet Schwedisch-Lappland, Bd. 3, Bot., p. 562, pl. 17, fig. 2. 1924.

Coll: ANSP 46763a.

*Navicula hasta* Pant.

*Navicula hasta* Pantocsek, Beitr. Kenntn. Foss. Bacill. Ungarns, Theil 3, p. 69, Beitr. 3, pl. 5, fig. 74. 1905.

Coll: 1813.

*Navicula heufleri* Grun.

*Navicula heufleri* Grunow, Verh. Zool.-Bot. Ges. Wien, 10:528, pl. 3, figs. 32a-b. 1860.

389 NAHEUFLE TCT NC CF STATIONS 1											
( 1350	BH 2	19AP1967	0.00661 )	(							

*Navicula heufleri* var. *leptocephala* (Bréb.) Patr.

*Navicula leptocephala* de Brébisson ex Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 7, fig. 16. 1880.

*Navicula cineta* var. *leptocephala* (Bréb.) Van Heurck, Syn. Diat. Belgique, p. 82. 1885.

*Navicula heufleri* var. *leptocephala* (Bréb.) Patrick in: Patrick and Reimer, Acad. Nat. Sci. Philadelphia Monogr., 13:515, pl. 49, fig. 7. 1966.

390 NAHEUFVL TCT NC CF STATIONS 2											
( 1522	BH 1	1E5E1967	0.00182 )	( 1417	HC 2	22MY1967	0.00374 )	(			

*Navicula imbricata* Bock

*Navicula imbricata* Bock, Nova Hedw., 5:228, pl. 3, figs. 150-160. 1963.

391 NAIMBRIC TCT NC CF STATIONS 1											
( 46756	EV	27AP1938	0.00168 )	(							

*Navicula integra* (Wm. Smith) Ralfs

*Pinnularia integra* Wm. Smith, Syn. British Diat., Vol. 2, p. 96. 1856.

*Navicula integra* (Wm. Smith) Ralfs in: Pritchard, Hist. Infusoria, 4th ed., p. 895. 1861.

393 NAINTEGR TCT NC CF STATIONS 7											
( 1236	C* 1	8JN1964	0.00350 )	( 1342	A 4	19AP1967	0.00361 )	( 1504	A 3	28AU1967	C.00247 )
( 1559	GS 7	40C1967	0.00350 )	( 1522	BH 1	18SE1967	0.00182 )	( 1417	HO 2	22MY1967	C.00374 )
( 1350	BH 2	19AP1967	0.03304 )	(							

*Navicula jaernefeltii* Hust.

*Navicula jaernefeltii* Hustedt, Arch. Hydrobiol., 39:111. 1942.

394 NAJAEERNE TCT NC OF STATIONS 7											
( 1395	GS19	13MY1967	0.00117 )	( 1560	GS 8	40C1967	0.00472 )	( 1565	GS13	50C1967	C.00208 )
( 1569	GS17	50C1967	0.00149 )	( 1574	GS22	60C1967	0.00288 )	( 1575	GS28	60C1967	C.00129 )
( 1551	ES 1	50C1967	0.00799 )	(							

*Navicula lacustris* Greg.

*Navicula lacustris* Gregory, Quart. J. Micr. Sci., 4:6, pl. 1, fig. 23. 1856.

396 NALACUST TCT NO OF STATIONS 16

( 3541	CH	1FE1881	0.01956 )	( 46514	CH	19AP1946	0.00107 )	( 46920	CH	20DE1946	C.00031 )
( 46919	CH	5JN1947	0.00152 )	( 46507	CH	JL1947	C.00049 )	( 46764	EV	17JL1937	C.00806 )
( 46747	EV	1AU1937	0.00743 )	( 46765	EV	7SE1937	0.02171 )	( 46760	EV	22SE1937	C.00492 )
( 46767	EV	27OC1937	0.00387 )	( 1258	F 1	6JL1964	0.00236 )	( 1352	GS16	12MY1967	C.00308 )
( 1526	MO 1	20SE1967	0.00569 )	( 1545	WL 1	20C1967	C.06081 )	( 1427	LU 2	29MY1967	C.01211 )
( 1354	GH 2	25AP1967	0.00173 )	(							

485 NASPECK TCT NO OF STATIONS 1

( 1254	D 2	15JL1964	0.00192 )	(
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*Navicula lanceolata* (Agardh) Kütz.

*Frustulia lanceolata* Agardh, Flora, 10:626. 1827.

*Navicula lanceolata* (Agardh) Kützling, Bacill., p. 94, pl. 28, fig. 38. 1844.

395 NALANCEO TCT NO OF STATIONS 67

( 60973	CH	1876	0.02362 )	( 46521	CH	23NO1945	0.00065 )	( 46915	CH	20FE1946	C.01138 )
( 46914	CH	19AP1946	0.00107 )	( 46520	CH	20DE1946	0.00031 )	( 46905	CH	JA1947	C.00123 )
( 46906	CH	MY1947	0.00199 )	( 46507	CH	JL1947	C.00049 )	( 46922	CH	21AU1947	C.00048 )
( 46758	EV	5JN1937	0.00357 )	( 46743	EV	20JN1937	0.00428 )	( 46764	EV	17JL1937	C.04029 )
( 46757	EV	25JL1937	0.12999 )	( 46747	EV	1AU1937	0.03218 )	( 46763	EV	23AU1937	C.18263 )
( 46765	EV	30AU1937	0.01115 )	( 46752	EV	15SE1937	0.15237 )	( 46760	EV	22SE1937	C.00492 )
( 46750	EV	24SE1937	0.01414 )	( 46744	EV	60C1937	0.02439 )	( 46748	EV	13OC1937	C.04270 )
( 46767	EV	27OC1937	0.01160 )	( 46749	EV	12MR1938	0.01214 )	( 46768	EV	16MR1938	C.04410 )
( 46762	EV	18MR1938	0.04411 )	( 1232	E 5	16MY1964	0.00174 )	( 1285	F 1	15SE1964	0.01165 )
( 1305	F 2	11OC1964	0.00173 )	( 1341	A 3	19AP1967	0.00108 )	( 1375	E 3	7MY1967	C.00241 )
( 1453	E 3	15JL1967	0.00253 )	( 1377	GS 1	9MY1967	0.00396 )	( 1389	GS13	12MY1967	C.00258 )
( 1390	GS14	12MY1967	0.00587 )	( 1391	GS15	12MY1967	0.00479 )	( 1392	GS16	12MY1967	C.00616 )
( 1394	GS18	13MY1967	0.00172 )	( 1555	GS 2	30C1967	0.00353 )	( 1558	GS 5	40C1967	C.00396 )
( 1560	GS 8	40C1967	0.00472 )	( 1565	GS13	50C1967	0.01521 )	( 1572	GS20	60C1967	C.00090 )
( 1573	GS21	60C1967	0.00112 )	( 1574	GS22	60C1967	0.00288 )	( 1575	GS28	60C1967	C.00129 )
( 1544	MU 1	20C1967	0.00238 )	( 1547	MS 1	20C1967	0.00798 )	( 1546	LU 1	20C1967	C.15005 )
( 1520	HO 1	18SE1967	0.00471 )	( 1521	SH 1	18SE1967	0.00577 )	( 1522	BM 1	18SE1967	C.01641 )
( 1527	TR 1	20SE1967	0.05031 )	( 1529	KW 1	20SE1967	C.01199 )	( 1545	WL 1	20C1967	C.03379 )
( 1552	SM 1	60C1967	0.00660 )	( 1550	MR 1	50C1967	C.26019 )	( 1553	SG 1	60C1967	C.00734 )
( 1426	MS 2	29MY1967	0.02100 )	( 1351	MI 2	21AP1967	C.00621 )	( 1427	LU 2	25MY1967	C.01211 )
( 1350	BH 2	19AP1967	0.04405 )	( 1401	MO 2	6MY1967	0.03528 )	( 1402	TR 2	6MY1967	C.09747 )
( 1400	SB 2	6MY1967	0.05361 )	( 1404	MG 2	10MY1967	0.01270 )	( 1406	GB 2	13MY1967	C.01078 )
( 1423	WA 2	25MY1967	0.00428 )	(							

*Navicula lanceolata* var. *cymbula* (Donk.) Cleve

*Navicula cymbula* Donkin, Quart. J. Micr. Sci., 9:294, pl. 18, fig. 6. 1869.

*Navicula lanceolata* var. *cymbula* (Donk.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Förlj, 27(3):22. 1895.

398 NALANCVC TCT NO OF STATIONS 4

( 1305	F 2	11OC1964	0.00173 )	( 1565	GS13	50C1967	0.00507 )	( 1428	PU 2	29MY1967	C.00301 )
( 1404	MO 2	10MY1967	0.01270 )	(							

*Navicula latens* Krasske

*Navicula latens* Krasske, Arch. Hydrobiol., 31:41. 1937.

395 NALATENS TCT NO OF STATIONS 12

( 46757	EV	25JL1937	0.00481 )	( 1521	SH 1	18SE1967	0.00577 )	( 1526	MO 1	20SE1967	C.00569 )
( 1527	TR 1	20SE1967	0.02516 )	( 1528	SB 1	20SE1967	0.01444 )	( 1530	FR 1	24SE1967	C.01000 )
( 1545	WL 1	20C1967	0.13514 )	( 1550	MR 1	50C1967	0.01239 )	( 1402	TR 2	6MY1967	C.00541 )
( 1354	GH 2	25AP1967	0.00345 )	( 1349	CI 2	19AP1967	0.00359 )	( 1422	GA 2	23MY1967	C.00511 )

*Navicula laterostrata* Hust.

*Navicula laterostrata* Hustedt, Internat. Rev. Hydrobiol., 13:357, fig. 4. 1925.

Coll: 1404.

*Navicula levanderi* Hust.

*Navicula levanderi* Hustedt, Internat. Rev. Hydrobiol., 43:174. 1943.

400 NALEVAND TCT NO OF STATIONS 2

( 46757	EV	25JL1937	0.00481 )	( 46763	EV	23AU1937	C.04058 )	(
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*Navicula menisculus* Schum.

*Navicula menisculus* Schumann, Schrift. K. Phys.-Ökonom. Ges. Königsberg,  
8:56, pl. 2, fig. 33. 1867.

401 NAMENISC TCT NO OF STATIONS 4											
( 1240	D 6	10JN1964	0.00153 )	( 1305	F 2	110C1964	C.00173 )	( 1337	C 3	2MR1967	C.00147 )
( 1341	A 3	15AP1967	0.00108 )	(							

*Navicula menisculus* var. *obtusa* Hust.

*Navicula menisculus* var. *obtusa* Hustedt, Arch. Hydrobiol., Suppl. 15:271,  
pl. 20, figs. 12-14. 1938.

402 NAMENIVC TCT NO OF STATIONS 9											
(46758	EV	5JN1937	0.00357 )	(46757	EV	25JL1937	0.00481 )	(46763	EV	23AU1937	C.06088 )
(46752	EV	15SE1937	0.06530 )	(46768	EV	16MR1938	0.02940 )	(46762	EV	18MR1938	C.02206 )
( 1544	MU 1	20C1967	0.00238 )	( 1545	WL 1	2CC1967	0.00676 )	( 1350	BH 2	19AP1967	C.00220 )

*Navicula menisculus* var. *upsaliensis* Grun.

*Navicula (menisculus* Schum. var.?) *upsaliensis* Grunow in: Cleve and Grunow,  
K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):33. 1880.

*Navicula menisculus* var. *upsaliensis* Grunow in: Van Heurck, Syn. Diat.  
Belgique, pl. 8, figs. 23-24. 1880.

403 NAMENIVU TCT NO OF STATIONS 40											
(46905	CH	MR1947	0.00455 )	(46512	CH	AP1947	C.01150 )	(46907	CH	JL1947	C.00049 )
(46758	EV	5JN1937	C.00357 )	(46771	EV	11JN1937	0.00238 )	(46763	EV	23AU1937	C.04058 )
(46752	EV	15SE1937	0.06530 )	(46767	EV	27OC1937	0.00774 )	(46762	EV	18MR1938	C.02206 )
( 1388	GS12	12MY1967	0.00603 )	( 1389	GS13	12MY1967	0.00258 )	( 1390	GS14	12MY1967	C.00587 )
( 1391	GS15	12MY1967	0.00475 )	( 1392	GS16	12MY1967	C.00308 )	( 1394	GS18	13MY1967	C.00172 )
( 1397	GS21	13MY1967	0.00065 )	( 1554	GS 1	30C1967	C.00356 )	( 1557	GS 4	30C1967	C.00374 )
( 1558	GS 5	4CC1967	C.00356 )	( 1565	GS13	5CC1967	C.05578 )	( 1567	GS15	50C1967	C.00159 )
( 1571	GS19	60C1967	C.00059 )	( 1573	GS21	60C1967	C.00112 )	( 1574	GS22	60C1967	C.01151 )
( 1544	MU 1	20C1967	0.00477 )	( 1546	LU 1	2CC1967	C.05002 )	( 1522	BH 1	18SE1967	C.00365 )
( 1526	MO 1	20SE1967	0.01138 )	( 1527	TR 1	20SE1967	C.06918 )	( 1528	SB 1	20SE1967	C.02888 )
( 1529	KW 1	20SE1967	0.04797 )	( 1545	WL 1	2CC1967	C.39192 )	( 1550	MR 1	50C1967	C.01239 )
( 1428	MU 2	25MY1967	C.00904 )	( 1417	HO 2	22MY1967	0.01122 )	( 1350	BH 2	19AP1967	C.02423 )
( 1354	CH 2	25AP1967	0.00173 )	( 1404	MQ 2	10MY1967	C.01270 )	( 1420	IH 2	23MY1967	C.01511 )
( 1423	WA 2	25MY1967	0.00428 )	(							

*Navicula micropupula* Chohn.

*Navicula micropupula* Chohnoky, Bot. Not., 110(3):353, fig. 61-63. 1957.

404 NAMICROP TCT NO OF STATIONS 3											
( 1258	F 1	6JL1964	0.00236 )	( 1528	SB 1	20SE1967	0.01444 )	( 1545	WL 1	20C1967	C.02027 )

*Navicula minima* Grun.

*Navicula minima* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 14, fig.  
15. 1880.

405 NAMINIMA TCT NO OF STATIONS 8											
(46905	CH	MR1947	0.00455 )	(46764	EV	17JL1937	0.01612 )	(46767	EV	27OC1937	C.00774 )
( 1291	C* 2	16CC1964	0.00245 )	( 1341	A 3	19AP1967	0.00108 )	( 1345	C 5	25AP1967	C.00195 )
( 1388	GS12	12MY1967	0.01207 )	( 1550	MR 1	50C1967	0.39648 )	(			

*Navicula minima* var. *okamurae* Skv.

*Navicula minima* var. *okamurae* Skvortzow, Phillipine J. Sci., 62:203, pl.  
1, fig. 23. 1937.

406 NAMINIVC TCT NO OF STATIONS 1											
( 1550	MR 1	50C1967	0.03717 )	(							

*Navicula minuscula* Grun.

*Navicula minuscula* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 14,  
fig. 3. 1880.

392 NAIMPGRR TCT NO OF STATIONS 4											
( 1244	F 1	11JN1964	C.00110 )	( 1565	GS13	50C1967	C.02028 )	( 1527	TR 1	20SE1967	C.01258 )
( 1550	MR 1	50C1967	0.01239 )	(							

*Navicula monoculata* Hust.

*Navicula monoculata* Hustedt, Arch. Hydrobiol., 40:921, pl. 41, fig. 4. 1945.

407 NAMONOCU TOT NO OF STATIONS 2

( 1571 GS19 60C1967 0.00059 ) ( 135C BH 2 19AP1967 0.00441 ) (

*Navicula muraliformis* Hust.

*Navicula muraliformis* Hustedt ex Brendemühl, Arch. Mikrobiol., 14:440, fig. 5. 1949.

408 NAMURALI TOT NO OF STATIONS 3

( 1268 E 2 15AU1964 0.00274 ) ( 1348 E 5 23AP1967 0.00137 ) ( 1451 C 7 16JUL1967 0.00197 )

*Navicula mutica* Kütz.

*Navicula mutica* Kützing, Bacill., p. 93, pl. 3, fig. 32. 1844.

Coll: 1734.

*Navicula mutica* var. *cohnii* (Hilse) Grun.

*Stauroneis cohnii* Hilse, Jahres-Ber. Schlesische Ges. Vaterl. Kult., 38:83. 1860.

*Navicula mutica* var. *cohnii* (Hilse) Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 10, fig. 17. 1880.

409 NAMUTIVC TOT NO OF STATIONS 3

(46916 CH 4MY1947 0.00068 ) (46522 CH 21AU1947 0.00097 ) ( 1241 E 2 13JUN1964 0.00148 )

*Navicula mutica* var. *tropica* Hust.

*Navicula mutica* var. *tropica* Hustedt, Arch. Hydrobiol., Suppl. 15:233, pl. 17, fig. 6. 1937.

410 NAMUTIVT TOT NO OF STATIONS 4

(46921 CH 23NO1945 0.00065 ) (46522 CH 21AU1947 0.00097 ) ( 1342 A 4 19AP1967 0.00180 )  
( 1350 BH 2 19AP1967 0.00220 ) (

*Navicula muticoides* Hust.

*Navicula muticoides* Hustedt, Instit. Parcs Nat. Congo Belge, Expl. Parc Nat. Albert, Mission H. Damas (1935-1936), Fasc. 8, p. 82, pl. 4, figs. 33-36. 1949.

411 NAMUTICC TOT NO OF STATIONS 1

(46758 EV 5JUN1937 0.00357 ) (

*Navicula muticopsis* V. H.

*Navicula muticopsis* Van Heurck, Exped. Antartic Belge, Bot., Diat., p. 12, pl. 2, fig. 181. 1909.

412 NAMUTICC TOT NO OF STATIONS 2

(46924 CH 10MY1946 0.00071 ) ( 1542 E 3 11OC1967 0.00509 ) (

*Navicula nyassensis* fo. *minor* O. Müll.

*Navicula nyassensis* fo. *minor* O. Müller, Bot. Jahrb., 45:83, pl. 1, fig. 6. 1911.

430 NAPUPUEM TCT NO OF STATIONS 13

(46758	EV	5JN1937	0.04636 )	(46764	EV	17JL1937	0.12087 )	(46757	EV	25JL1937	0.02889 )
(46747	EV	1AU1937	0.00248 )	(46763	EV	23AU1937	0.08117 )	(46752	EV	15SE1937	0.06530 )
(46750	EV	24SE1937	0.01414 )	(46767	EV	27GC1937	0.00387 )	(46762	EV	18MR1938	0.02206 )
(46761	EV	27MY1938	0.00545 )	(1545	WL 1	20C1967	0.00676 )	(1550	MR 1	5CC1967	0.01239 )
(1417	MO 2	22MY1967	0.00374 )	(							

*Navicula oblonga* (Kütz.) Kütz.

*Frustulia oblonga* Kützing, Linnaea, 8:548, pl. 14, fig. 24. 1833.

*Navicula oblonga* (Kütz.) Kützing, Bacill., p. 97, pl. 4, fig. 21. 1844.

413 NAOBLONG TCT NO OF STATIONS 4

(13541	CH	1FE1881	0.00978 )	(1538	E 5	23SE1967	0.00552 )	(1388	GS12	12MY1967	0.00603 )
(1569	GS17	50C1967	0.00149 )	(							

*Navicula odiosa* Wallace

*Navicula odiosa* Wallace, Not. Nat. Acad. Nat. Sci. Philadelphia, 331:5, pl. 2, fig. 4. 1960.

414 NAODIOSA TCT NO OF STATIONS 17

(46923	CH	22NO1946	0.00219 )	(46515	CH	5JN1947	0.00303 )	(46757	EV	25JL1937	0.00563 )
(46752	EV	15SE1937	0.04354 )	(46750	EV	24SE1937	0.00471 )	(46759	EV	19MY1938	0.00338 )
(1256	E 2	14JL1964	0.00183 )	(1268	E 2	15AU1964	0.00274 )	(1270	F 1	10AU1964	0.00272 )
(1285	F 1	15SE1964	0.02912 )	(1397	GS21	13MY1967	0.00065 )	(1557	GS 4	30C1967	0.00374 )
(1573	GS21	60C1967	0.00224 )	(1574	GS22	60C1967	0.00575 )	(1529	KW 1	20SE1967	0.00398 )
(1401	MO 2	6MY1967	0.00588 )	(1429	WL 2	25MY1967	0.01062 )	(			

*Navicula oppugnata* Hust.

*Navicula oppugnata* Hustedt, Arch. Hydrobiol., 40(4):925, pl. 42, fig. 1. 1945.

415 NAOPPUGG TCT NO OF STATIONS 37

(46917	CH	12JA1946	0.00028 )	(46523	CH	22NO1946	0.00219 )	(46920	CH	20DE1946	0.00092 )
(46916	CH	4MY1947	0.00170 )	(46519	CH	5JN1947	0.01062 )	(46922	CH	21AU1947	0.00533 )
(46758	EV	5JN1937	0.00712 )	(46771	EV	11JN1937	0.00475 )	(46743	EV	20JN1937	0.01285 )
(46764	EV	17JL1937	0.07252 )	(46757	EV	25JL1937	0.02889 )	(46747	EV	1AU1937	0.05446 )
(46763	EV	23AU1937	0.08117 )	(46752	EV	15SE1937	0.06530 )	(46760	EV	22SE1937	0.00985 )
(46750	EV	24SE1937	0.01414 )	(46744	EV	60C1937	0.00975 )	(46767	EV	27OC1937	0.00774 )
(46749	EV	12MR1938	0.01214 )	(46768	EV	16MR1938	0.01470 )	(46762	EV	18MR1938	0.06617 )
(46751	EV	30MR1938	0.02233 )	(46759	EV	19MY1938	0.00338 )	(46766	EV	14DE1938	0.01584 )
(1240	D 6	10JN1964	0.00153 )	(1278	C 6	18SE1964	0.00384 )	(1297	D 6	14OC1964	0.00190 )
(1388	GS12	12MY1967	0.01207 )	(1392	GS16	12MY1967	0.00307 )	(1394	GS18	13MY1967	0.00172 )
(1574	GS22	60C1967	0.00288 )	(1546	LU 1	20C1967	0.00500 )	(1527	TR 1	20SE1967	0.00629 )
(1545	WL 1	20C1967	0.03379 )	(1427	LU 2	29MY1967	0.01211 )	(1401	MO 2	6MY1967	0.00588 )
(1402	TR 2	6MY1967	0.00541 )	(							

*Navicula ordinaria* Hust.

*Navicula ordinaria* Hustedt, Arch. Hydrobiol., 43:352, pl. 37, figs. 27-28. 1950.

83 ANSPECOA TCT NO OF STATIONS 2

(1285	F 1	15SE1964	0.00582 )	(1565	GS13	50C1967	0.01014 )	(			
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*Navicula paca* Hohn and Hellerm.

*Navicula paca* Hohn and Hellerman, Trans. American Micr. Soc., 82(3):307, pl. 3, fig. 11. 1963.

482 NASPECCB TCT NO OF STATIONS 1

(1268	E 2	15AU1964	0.00821 )	(							
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*Navicula paludosa* Hust.

*Navicula paludosa* Hustedt, Abh. Naturw. Ver. Bremen, 34:286. 1957.

416 NAPALUDO TCT NO OF STATIONS 12

(46764	EV	17JL1937	0.00806 )	( 1304	F 1	11CC1964	C.00247 )	( 1546	LU 1	20C1967	C.C1000 )
( 1527	TR 1	20SE1967	0.01887 )	( 1530	FR 1	24SE1967	C.01000 )	( 1545	WL 1	20C1967	C.00676 )
( 1550	MR 1	5CC1967	0.12390 )	( 1426	MS 2	29MY1967	C.C1050 )	( 1427	LU 2	29MY1967	C.02421 )
( 1350	BH 2	19AP1967	0.03524 )	( 1354	GH 2	25AP1967	0.00690 )	( 1404	MQ 2	10MY1967	C.C1270 )

*Navicula pelliculosa* (Bréb.) Hilse

*Synedra minutissima* var. *pelliculosa* Kützing, Sp. Alg., p. 40. 1849.

(=*Frustulia pelliculosa* de Brébisson in litt. fide Kützing.).

*Navicula pelliculosa* (Bréb.) Hilse, Abh. Schleische Ges. Vaterl. Kult., 2(2):68. 1863.

Coll: 1712.

*Navicula peratomus* Hust.

*Navicula peratomus* Hustedt, Abh. Naturw. Ver. Bremen, 34(3):277, fig. 26. 1957.

417 NAPERATO TCT NO CF STATIONS 1

( 1350	BH 2	15AP1967	0.01101 )	(
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*Navicula perpusilla* Grun.

*Navicula perpusilla* Grunow, Verh. Zool.-Bot. Wien, 10:552, pl. 4, fig. 7. 1860.

418 NAPERPUS TCT NO OF STATIONS 1

( 1550	MR 1	50C1967	0.01239 )	(
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*Navicula placentula* (Ehr.) Kütz.

*Pinnularia placentula* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:421, pl. 3(7), fig. 22. 1843.

*Navicula placentula* (Ehr.) Kützing, Bacill., p. 94. 1844.

419 NAPLACEN TCT NO CF STATIONS 13

(46917	CH	12JA1946	0.00055 )	(46514	CH	19AP1946	0.00107 )	(46905	CH	JA1947	C.CC123 )
(46916	CH	4MY1947	0.00034 )	(46770	EV	9JL1937	C.01193 )	(46757	EV	25JL1937	C.00963 )
(46764	EV	17JL1937	0.01612 )	(46763	EV	23AU1937	C.02029 )	(46752	EV	15SE1937	C.02177 )
(46756	EV	27AP1938	0.00168 )	(46761	EV	27MY1938	0.00273 )	( 1275	D 2	17SE1964	C.00645 )
( 1568	GS16	50C1967	0.00144 )	(							

*Navicula placentula* var. *rostrata* A. Mayer

*Navicula placentula* var. *rostrata* A. Mayer, Kryptog. Forsch., 3:125, pl. 3, figs. 27a-b. 1918.

42C NAPLACVR TCT NO OF STATIONS 20

(46924	CH	10MY1946	0.00071 )	(46919	CH	5JN1947	0.00152 )	(46922	CH	21AU1947	C.0C194 )
(46758	EV	5JN1937	0.00357 )	(46771	EV	11JN1937	0.00238 )	(46743	EV	20JN1937	C.00856 )
(46764	EV	17JL1937	0.01612 )	(46757	EV	25JL1937	C.00481 )	(46752	EV	15SE1937	C.C4354 )
(46768	EV	16MR1938	0.01470 )	( 1236	C* 1	8JN1964	0.00175 )	( 1396	GS20	13MY1967	C.00074 )
( 1554	GS 1	30C1967	0.00356 )	( 1565	GS13	50C1967	0.00507 )	( 1520	HC 1	18SE1967	C.00471 )
( 1527	JR 1	20SE1967	0.00629 )	( 1401	MC 2	6MY1967	0.00588 )	( 1419	BU 2	23MY1967	C.C1831 )
( 1422	GA 2	23MY1967	0.00511 )	( 1423	WA 2	25MY1967	0.00428 )	(			

*Navicula platycephala* O. Müll.

*Navicula platycephala* O. Müller, Bot. Jahrb., 45:84, pl. 1, fig. 12. 1911.

Coll: 1574.

*Navicula platystoma* var. *pantocsekii* Wisl. and Kolbe

*Navicula platystoma* var. *pantocsekii* Wislouch and Kolbe, Trav. Exped. Sci. Olenetz, Part 5, Livr. 1, p. 73, fig. 10. 1927.

421 NAPLATVP TCT NO OF STATIONS 30

( 3541	CH	1FE1881	0.00578 )	(46521	CH	23NO1945	0.00129 )	(46914	CH	19AP1946	0.00107 )
(46924	CH	10MY1946	0.00141 )	(46520	CH	20DE1946	0.00123 )	(46905	CH	JA1947	0.00123 )
(46906	CH	MY1947	0.00066 )	(46922	CH	21AU1947	0.00291 )	(46758	EV	5JN1937	0.00357 )
(46771	EV	11JN1937	0.00238 )	(46764	EV	17JL1937	0.03223 )	(46757	EV	25JL1937	0.01926 )
(46747	EV	1AU1937	0.01980 )	(46763	EV	23AU1937	0.06388 )	(46752	EV	15SE1937	0.02177 )
(46760	EV	22SE1937	0.00985 )	(46750	EV	24SE1937	0.00943 )	(46744	EV	6DC1937	0.00488 )
(46748	EV	13OC1937	0.02135 )	(46768	EV	18MR1938	0.01470 )	(46762	EV	18MR1938	0.04411 )
( 1279	E 1	16SE1964	0.00393 )	( 1394	GS18	13MY1967	0.00172 )	( 1567	GS15	5OC1967	0.00318 )
( 1546	LU 1	20C1967	0.00500 )	( 1526	MO 1	20SE1967	0.00569 )	( 1527	TR 1	20SE1967	0.01258 )
( 1545	WL 1	20C1967	0.00676 )	( 1550	MR 1	5OC1967	0.01239 )	( 1429	WL 2	29MY1967	0.01062 )

*Navicula potzgeri* Reim.

*Navicula potzgeri* Reimer, Proc. Indiana Acad. Sci., 71:315, pl. 1, fig. 5. 1962.

Coll: 1808.

*Navicula protracta* Grun.

*Navicula (crucicula* var.?) *protracta* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):35, pl. 2, fig. 38. 1880.

422 NAPROTRA TCT NO OF STATIONS 8

(46924	CH	10MY1946	0.00071 )	(46522	CH	21AU1947	0.00145 )	(46749	EV	12MR1936	0.01214 )
( 1546	LU 1	20C1967	0.01000 )	( 1521	SH 1	18SE1967	0.00577 )	( 1550	MR 1	5OC1967	0.02478 )
( 1350	BH 2	19AP1967	0.00661 )	( 1405	ES 2	12MY1967	0.00645 )	(			

*Navicula protracta* fo. *subcapitata* (Wisl. and Por.) Hustedt

*Navicula lundstromii* var. *subcapitata* Wislouch and Poretzky, Trav. Soc. Natural. Leningrad, 47-53:139, fig. 2. 1924.

*Navicula protracta* var. *subcapitata* (Wisl. and Por.) Hustedt in: Rabenhorst, Kryptog.-Fl. Deutschlands, 7(3)2:316, fig. 1434. 1962.

423 NAPROTES TCT NO OF STATIONS 2

( 1388	GS12	12MY1967	0.00603 )	( 1565	GS13	5OC1967	0.01521 )	(			
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*Navicula protracta* var. *elliptica* Gallik

*Navicula protracta* var. *elliptica* Gallik, Pannonhalmi Szmlé, 10:65, fig. 7. 1935.

424 NAPROTE TCT NO OF STATIONS 24

(46917	CH	12JA1946	0.00028 )	(46771	EV	11JN1937	0.00238 )	(46764	EV	17JL1937	0.03223 )
(46757	EV	25JL1937	0.01926 )	(46747	EV	1AU1937	0.00990 )	(46763	EV	23AU1937	0.02029 )
(46752	EV	15SE1937	0.19591 )	(46760	EV	22SE1937	0.00585 )	(46750	EV	24SE1937	0.00943 )
(46744	EV	6DC1937	0.01462 )	(46748	EV	13OC1937	0.06405 )	(46761	EV	27MY1938	0.00273 )
( 1264	C 1	10AU1964	0.00193 )	( 1563	GS11	5OC1967	0.00234 )	( 1546	LU 1	20C1967	0.01000 )
( 1520	HO 1	18SE1967	0.00471 )	( 1527	TR 1	20SE1967	0.03145 )	( 1545	WL 1	20C1967	0.04054 )
( 1426	MS 2	25MY1967	0.01050 )	( 1427	LU 2	25MY1967	0.01211 )	( 1417	HO 2	22MY1967	0.00374 )
( 1350	BH 2	19AP1967	0.00220 )	( 1402	TR 2	6MY1967	0.00541 )	( 1423	WA 2	25MY1967	0.00428 )

*Navicula pseudoclementis* Hust.

*Navicula pseudoclementis* Hustedt, Bot. Not., 1952(4):400, fig. 107. 1952.

Coll: ANSP 46920a.

*Navicula pseudoscutiformis* Hust.

*Navicula pseudoscutiformis* Hustedt in: Pascher, Sussw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 291, fig. 495. 1930.

## 425 NAPSCUTI TCT NO OF STATIONS 10

( 1346	C 7	21AP1967	0.00134 )	( 1541	E 2	110C1967	0.00532 )	( 1388	GS12	12MY1967	C.CC603 )
( 1350	GS14	12MY1967	0.00587 )	( 1396	GS20	13MY1967	0.00074 )	( 1555	ES 2	30C1967	C.00706 )
( 1556	GS 3	30C1967	0.00521 )	( 1550	MR 1	50C1967	0.04956 )	( 1354	CH 2	25AP1967	C.CC173 )
( 1404	MQ 2	10MY1967	0.01270 )	(							

*Navicula pseudoventralis* Hust.

*Navicula pseudoventralis* Hustedt in: A. Schmidt, Atlas Diat., pl. 401, figs. 116-118. 1934.

## 426 NAPVENTR TCT NO OF STATIONS 1

( 1350	BH 2	15AP1967	0.00220 )	(
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*Navicula pupula* Kütz.

*Navicula pupula* Kützting, Bacill., p. 93, pl. 30, fig. 40. 1844.

## 427 NAPUPULA TCT NO OF STATIONS 56

( 60973	CH	1876	0.02362 )	( 46523	CH	22NO1546	0.00656 )	( 46905	CH	JA1947	C.CC245 )
( 46909	CH	MR1947	0.00455 )	( 46506	CH	MY1947	0.00398 )	( 46907	CH	JL1947	0.00049 )
( 46922	CH	21AU1947	0.00097 )	( 46758	EV	5JN1937	0.03209 )	( 46743	EV	20JN1937	C.C1285 )
( 46745	EV	3JL1937	0.02090 )	( 46770	EV	9JL1937	0.01193 )	( 46764	EV	17JL1937	C.22562 )
( 46757	EV	25JL1937	0.03370 )	( 46747	EV	1AU1937	0.00742 )	( 46763	EV	23AU1937	C.16234 )
( 46752	EV	15SE1937	0.08707 )	( 46750	EV	24SE1937	0.01872 )	( 46767	EV	27OC1937	C.CC774 )
( 46768	EV	16MR1938	0.01470 )	( 46762	EV	18MR1938	0.08822 )	( 46756	EV	27AP1938	C.CC168 )
( 46759	EV	19MY1938	0.00338 )	( 1246	F 3	11JN1964	0.00598 )	( 1279	E 1	16SE1964	C.CC393 )
( 1285	F 1	15SE1964	0.00582 )	( 1298	E 1	12OC1964	0.00269 )	( 1387	GS11	12MY1967	C.CC396 )
( 1388	GS12	12MY1967	0.00603 )	( 1389	GS13	12MY1967	0.00258 )	( 1565	GS13	50C1967	C.C7606 )
( 1566	GS14	50C1967	0.00183 )	( 1568	GS16	50C1967	0.00144 )	( 1574	GS22	60C1967	C.01726 )
( 1547	MS 1	20C1967	0.01597 )	( 1546	LU 1	20C1967	0.01000 )	( 1520	HO 1	18SE1967	C.CC471 )
( 1521	SH 1	18SE1967	0.00577 )	( 1522	BH 1	18SE1967	0.00729 )	( 1526	MO 1	20SE1967	0.00569 )
( 1527	TR 1	20SE1967	0.03774 )	( 1529	KW 1	20SE1967	0.01199 )	( 1545	WL 1	20C1967	C.CC676 )
( 1550	MR 1	50C1967	0.09912 )	( 1553	SG 1	60C1967	0.00734 )	( 1426	MS 2	29MY1967	0.01050 )
( 1427	LU 2	29MY1967	0.01211 )	( 1417	HO 2	22MY1967	0.00374 )	( 1350	BH 2	19AP1967	C.CC506 )
( 1400	SB 2	6MY1967	0.00596 )	( 1352	KW 2	21AP1967	0.00859 )	( 1354	GH 2	25AP1967	C.CC173 )
( 1429	WL 2	29MY1967	0.01062 )	( 1404	MQ 2	10MY1967	C.CC508 )	( 1405	ES 2	12MY1967	C.CC1935 )
( 1407	SM 2	14MY1967	0.00597 )	( 1422	GA 2	23MY1967	0.00511 )	(			

*Navicula pupula* var. *aquaeductae* (Krasske) Hust.

*Navicula aquaeductae* Krasske, Bot. Arch., 3:197, fig. 4. 1923.

*Navicula pupula* var. *aquaeductae* (Krasske) Hustedt in: Pascher, Süßsw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 282. 1930.

## 432 NAPUPUVA TCT NO OF STATIONS 1

( 1550	MR 1	50C1967	0.01239 )	(
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*Navicula pupula* var. *capitata* Skv. and Meyer

*Navicula pupula* var. *capitata* Skvortzow and Meyer, Proc. Sungaree River Biol. Sta., 1(5):15, pl. 1, fig. 40. 1928.

## 428 NAPUPUFC TCT NO OF STATIONS 7

( 46758	EV	5JN1937	0.00357 )	( 46763	EV	23AU1937	C.CC4058 )	( 46752	EV	15SE1937	C.02177 )
( 46760	EV	22SE1937	0.00492 )	( 1565	GS13	50C1967	0.00507 )	( 1417	HO 2	22MY1967	C.CC374 )
( 1350	BH 2	19AP1967	0.00441 )	(							

*Navicula pupula* var. *elliptica* Hust.

*Navicula pupula* var. *elliptica* Hustedt, Abh. Naturw. Ver. Bremen, 20:291, pl. 3, fig. 40. 1911.

## 429 NAPUPUFE TCT NO OF STATIONS 2

( 46915	CH	20FE1946	0.00565 )	( 46764	EV	17JL1937	0.00806 )	(
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*Navicula pupula* var. *rectangularis* (Greg.) Grun.

*Stauroneis rectangularis* Gregory, Quart. J. Micr. Sci., 2:99, pl. 4, fig. 17. 1854.

*Navicula pupula* var. *rectangularis* (Greg.) Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):45. 1880.



431 NAPUPUFR TCT NO OF STATIONS 3											
( 46764 )	EV	17JL1937	0.00806 )	( 1565 )	GS13	50C1967	0.00507 )	( 1423 )	WA 2	25MY1967	C.00428 )

*Navicula pupula* var. *rostrata* Hust.

*Navicula pupula* var. *rostrata* Hustedt, Abh. Naturw. Ver. Bremen, 20:211, pl. 3, fig. 39. 1911.

433 NAPUPUVR TCT NO OF STATIONS 13											
( 46973 )	CH	1876	0.02362 )	( 46524 )	CH	10MY1946	0.00071 )	( 46919 )	CH	5JN1947	C.00152 )
( 46922 )	CH	21AU1947	0.00145 )	( 46747 )	EV	1AU1937	0.00743 )	( 46750 )	EV	24SE1937	C.00471 )
( 1388 )	GS12	12MY1967	0.00603 )	( 1526 )	MQ 1	20SE1967	0.00569 )	( 1551 )	ES 1	50C1967	C.00799 )
( 1550 )	MR 1	50C1967	0.01239 )	( 1350 )	BH 2	19AP1967	0.00220 )	( 1407 )	SM 2	14MY1967	C.00597 )
( 1421 )	CH 2	23MY1967	0.01735 )	(							

*Navicula pygmaea* Kütz.

*Navicula pygmaea* Klützing, Sp. Alg., p. 77. 1849.

434 NAPIYMAE TCT NO OF STATIONS 3											
( 1264 )	C* 1	10AU1964	0.00193 )	( 1565 )	GS13	50C1967	0.00507 )	( 1522 )	BH 1	18SE1967	C.00182 )

*Navicula quadripartita* Hust.

*Navicula quadripartita* Hustedt, Arch. Hydrobiol., Suppl. 15:263, pl. 18, figs. 35-37. 1937.

436 NAQPARTI TCT NO OF STATIONS 1											
( 1545 )	WL 1	20C1967	0.00676 )	(							

*Navicula radiosa* Kütz.

*Navicula radiosa* Klützing, Bacill., p. 91, pl. 4, fig. 23. 1844.

437 NARADICS TCT NO OF STATIONS 101											
( 60973 )	CH	1876	0.02362 )	( 3540 )	CH	11MY1875	0.06523 )	( 3541 )	CH	1FE1881	C.23476 )
( 3507 )	CH	19FE1881	0.04528 )	( 46510 )	CH	0C1945	0.00218 )	( 46921 )	CH	23NO1945	C.00517 )
( 46917 )	CH	12JA1946	0.00527 )	( 46515 )	CH	20FE1946	0.01707 )	( 46914 )	CH	19AP1946	C.00427 )
( 46924 )	CH	10MY1946	0.00423 )	( 46523 )	CH	22NO1946	0.03716 )	( 46920 )	CH	20DE1946	C.01109 )
( 46905 )	CH	JA1947	0.00123 )	( 46509 )	CH	MR1947	0.02277 )	( 46912 )	CH	AP1947	C.04599 )
( 46916 )	CH	4MY1947	0.02409 )	( 46506 )	CH	MY1947	0.01858 )	( 46919 )	CH	5JN1947	C.10925 )
( 46907 )	CH	JL1947	0.11785 )	( 46522 )	CH	21AU1947	0.04507 )	( 46758 )	EV	5JN1937	C.01783 )
( 46771 )	EV	11JN1937	0.00475 )	( 46743 )	EV	20JN1937	0.02141 )	( 46770 )	EV	9JL1937	C.01193 )
( 46764 )	EV	17JL1937	0.20951 )	( 46757 )	EV	25JL1937	0.12999 )	( 46747 )	EV	1AU1937	C.08664 )
( 46763 )	EV	23AU1937	0.04058 )	( 46752 )	EV	15SE1937	0.02177 )	( 46744 )	EV	60C1937	C.00488 )
( 46748 )	EV	13CC1937	0.02135 )	( 46767 )	EV	27QC1937	0.00774 )	( 46768 )	EV	16MR1938	C.01470 )
( 46762 )	EV	18MR1938	0.06617 )	( 46751 )	EV	30MR1938	0.01117 )	( 46772 )	EV	18AP1938	C.00710 )
( 46759 )	EV	19MY1938	0.00338 )	( 46766 )	EV	14DE1938	0.01584 )	( 1232 )	E 5	16MY1964	C.00348 )
( 1240 )	D 6	10JN1964	0.00153 )	( 1241 )	E 2	13JN1964	0.00148 )	( 1243 )	E 6	13JN1964	C.00626 )
( 1244 )	F 1	11JN1964	0.00768 )	( 1245 )	F 2	11JN1964	0.02766 )	( 1246 )	F 3	11JN1964	C.03586 )
( 1258 )	F 1	6JL1964	0.00708 )	( 1259 )	F 2	6JL1964	0.00310 )	( 1260 )	F 3	6JL1964	C.00573 )
( 1268 )	F 2	15AU1964	0.00547 )	( 1279 )	E 1	16SE1964	0.01178 )	( 1285 )	F 1	15SE1964	C.03494 )
( 1286 )	F 2	15SE1964	0.01095 )	( 1290 )	C* 1	16CC1964	0.00379 )	( 1304 )	F 1	110C1964	C.00494 )
( 1305 )	F 2	110C1964	0.00345 )	( 1306 )	F 3	110C1964	0.00832 )	( 1341 )	A 3	19AP1967	C.00108 )
( 1345 )	C 5	25AP1967	0.00195 )	( 1379 )	GS 3	5MY1967	0.00928 )	( 1380 )	GS 4	9MY1967	C.00504 )
( 1382 )	GS 6	10MY1967	0.01665 )	( 1383 )	GS 7	10MY1967	0.00267 )	( 1384 )	GS 8	10MY1967	C.00739 )
( 1385 )	GS 9	10MY1967	0.00706 )	( 1386 )	GS10	12MY1967	0.00287 )	( 1387 )	GS11	12MY1967	C.02376 )
( 1388 )	GS12	12MY1967	0.23529 )	( 1389 )	GS13	12MY1967	0.03868 )	( 1390 )	GS14	12MY1967	C.24662 )
( 1391 )	GS15	12MY1967	0.19633 )	( 1392 )	GS16	12MY1967	0.01541 )	( 1393 )	GS17	13MY1967	C.06575 )
( 1394 )	GS18	13MY1967	0.11009 )	( 1395 )	GS19	13MY1967	0.00352 )	( 1396 )	GS20	13MY1967	C.00148 )
( 1398 )	GS22	14MY1967	0.00607 )	( 1558 )	GS 5	40C1967	0.00793 )	( 1563 )	GS11	50C1967	C.00701 )
( 1564 )	GS12	50C1967	0.00165 )	( 1565 )	GS13	50C1967	0.01521 )	( 1566 )	GS14	50C1967	C.01101 )
( 1567 )	GS15	50C1967	0.08891 )	( 1568 )	GS16	50C1967	0.00289 )	( 1569 )	GS17	50C1967	C.13081 )
( 1570 )	GS18	50C1967	0.21817 )	( 1571 )	GS19	60C1967	0.00117 )	( 1572 )	GS20	60C1967	C.00090 )
( 1574 )	GS22	60C1967	0.01438 )	( 1575 )	GS28	60C1967	0.00387 )	( 1522 )	BH 1	18SE1967	C.00182 )
( 1549 )	MQ 1	40C1967	0.01370 )	( 1551 )	ES 1	50C1967	0.00799 )	( 1552 )	SM 1	60C1967	C.00660 )
( 1550 )	MR 1	50C1967	0.02478 )	( 1426 )	MS 2	29MY1967	C.01050 )	( 1350 )	BH 2	19AP1967	C.00881 )
( 1402 )	TR 2	6MY1967	0.00541 )	( 1403 )	CA 2	10MY1967	0.09154 )	( 1404 )	MQ 2	10MY1967	C.06352 )
( 1405 )	ES 2	12MY1967	C.01935 )	( 1407 )	SM 2	14MY1967	0.00597 )	(			

*Navicula radiosa* var. *parva* Wallace

*Navicula radiosa* var. *parva* Wallace, Not. Nat. Acad. Nat. Sci. Philadelphia, 331:3, pl. 1, fig. 5. 1960.

438 NARADIVP TCT NO OF STATIONS 2											
( 46922 )	CH	21AU1947	0.00048 )	( 1285 )	F 1	15SE1964	0.01165 )	(			

*Navicula radiosa* var. *tenella* (Bréb.) Grun.

*Navicula tenella* de Brébisson ex Kützling, Sp. Alg., p. 74. 1849.

*Navicula radiosa* var. *tenella* (Bréb.) Grunow in: Van Heurck, Syn. Diat. Belgique, p. 84. 1885.

439 NARADIVT TOT NO OF STATIONS 57

(46915	CH	20FE1946	0.00569 )	(46520	CH	20DE1946	C.00031 )	(46919	CH	5JN1947	C.C0303 )
(46764	EV	17JL1937	0.04029 )	(46757	EV	25JL1937	0.01926 )	(46763	EV	23AU1937	C.04058 )
(46766	EV	14DE1938	0.01584 )	( 1229	D 5	14MY1964	0.00211 )	( 1231	E 3	16MY1964	C.C0245 )
( 1240	D 6	10JN1964	0.00153 )	( 1243	E 6	13JN1964	0.00209 )	( 1244	F 1	11JN1964	0.00439 )
( 1256	E 2	14JL1964	0.00183 )	( 1258	F 1	6JL1964	0.00944 )	( 1268	E 2	15AU1964	C.C1094 )
( 1270	F 1	10AU1964	0.01634 )	( 1275	D 2	17SE1964	0.00645 )	( 1279	E 1	16SE1964	0.01178 )
( 1285	F 1	15SE1964	0.52996 )	( 1286	F 2	15SE1964	C.01095 )	( 1304	F 1	11OC1964	C.C0494 )
( 1320	E 4	7NO1964	0.06207 )	( 1340	C 7	28PR1967	C.00073 )	( 1341	A 3	19AP1967	C.C0325 )
( 1452	E 2	14JL1967	0.00852 )	( 1536	E 2	24SE1967	0.00545 )	( 1541	E 2	11OC1967	C.01064 )
( 1542	E 3	11OC1967	0.00509 )	( 1387	GS11	12MY1967	0.00396 )	( 1388	GS12	12MY1967	C.C0603 )
( 1389	GS13	12MY1967	0.00258 )	( 1390	GS14	12MY1967	0.00587 )	( 1394	GS18	13MY1967	C.00344 )
( 1395	GS19	13MY1967	0.00117 )	( 1554	GS 1	30C1967	0.00712 )	( 1555	GS 2	30C1967	C.C0706 )
( 1557	GS 4	30C1967	0.01121 )	( 1558	GS 5	40C1967	0.00793 )	( 1560	GS 8	40C1967	C.C0945 )
( 1574	GS22	60C1967	0.00863 )	( 1544	MU 1	20C1967	0.00477 )	( 1547	MS 1	20C1967	C.CC798 )
( 1522	BH 1	18SE1967	0.00182 )	( 1530	FR 1	24SE1967	C.12001 )	( 1549	MQ 1	40C1967	C.01370 )
( 1552	SM 1	60C1967	0.00660 )	( 1550	MR 1	50C1967	0.04956 )	( 1553	SG 1	60C1967	C.C1469 )
( 1428	MU 2	29MY1967	0.00301 )	( 1426	MS 2	29MY1967	0.02100 )	( 1350	BH 2	19AP1967	0.06388 )
( 1402	TR 2	6MY1967	0.00541 )	( 1352	KW 2	21AP1967	0.00859 )	( 1354	GH 2	25AP1967	C.C0345 )
( 1403	CA 2	10MY1967	0.23535 )	( 1404	MQ 2	10MY1967	0.08892 )	( 1405	ES 2	12MY1967	C.C1290 )

*Navicula reinhardtii* (Grun.) Grun.

*Stauroneis reinhardtii* Grunow, Verh. Zool.-Bot. Ges. Wien, 10:566, pl. 6, fig. 19. 1860.

*Navicula reinhardtii* (Grun.) Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):32. 1880.

440 NAREIAHA TCT NO OF STATIONS 41

(60973	CH	1876	0.04724 )	( 3540	CH	11MY1879	0.00932 )	( 3541	CH	1FE1881	C.CC978 )
(46910	CH	0C1945	0.00109 )	(46521	CH	23NO1945	C.00129 )	(46917	CH	12JA1946	C.CC055 )
(46924	CH	10MY1946	0.00071 )	(46520	CH	20DE1946	0.00246 )	(46916	CH	4MY1947	C.00034 )
(46906	CH	MY1947	C.CC066 )	(46507	CH	JL1947	0.00148 )	(46922	CH	21AU1947	C.CC97 )
(46758	EV	5JN1937	0.00713 )	(46752	EV	15SE1937	0.06530 )	(46750	EV	24SE1937	C.CC943 )
(46744	EV	60C1937	0.00488 )	(46748	EV	13CC1937	C.02135 )	(46767	EV	27OC1937	C.CC774 )
(46745	EV	12MR1938	C.01214 )	(46751	EV	30MR1938	C.01117 )	(46761	EV	27MY1938	C.CC273 )
( 1236	C* 1	8JN1964	0.00175 )	( 1245	F 2	11JN1964	C.00346 )	( 1258	F 1	6JL1964	C.00236 )
( 1285	F 1	15SE1964	0.00582 )	( 1541	E 2	11CC1967	C.00532 )	( 1387	GS11	12MY1967	C.CC396 )
( 1391	GS15	12MY1967	0.00479 )	( 1396	GS20	13MY1967	0.00148 )	( 1398	GS22	14MY1967	C.CC304 )
( 1574	GS22	60C1967	0.00575 )	( 1575	GS28	60C1967	0.00387 )	( 1544	MU 1	20C1967	C.CC238 )
( 1545	WL 1	20C1967	0.00676 )	( 1550	MR 1	50C1967	0.01239 )	( 1426	MS 2	29MY1967	C.02100 )
( 1354	GH 2	25AP1967	0.00345 )	( 1429	WL 2	29MY1967	C.01062 )	( 1404	MQ 2	10MY1967	C.C1270 )
( 1405	ES 2	12MY1967	0.00645 )	( 1407	SM 2	14MY1967	0.00597 )	(			

*Navicula reinhardtii* var. *elliptica* Hérib.

*Navicula reinhardtii* var. *elliptica* Héribaud, Diat. Foss. Auvergne, Vol. 2, p. 8. 1903.

441 NAREINVE TCT NO OF STATIONS 7

(46905	CH	JA1947	0.00245 )	(46915	CH	5JN1947	0.00152 )	( 1544	MU 1	20C1967	C.CC238 )
( 1528	SB 1	20SE1967	0.01444 )	( 1428	MU 2	29MY1967	0.00301 )	( 1427	LU 2	29MY1967	0.03632 )
( 1354	GH 2	25AP1967	0.00518 )	(							

*Navicula rhynchocephala* Kütz.

*Navicula rhynchocephala* Kützling, Bacill., p. 152, pl. 30, fig. 35. 1844.

442 NARHYNCH TCT NO OF STATIONS 7

(46915	CH	20FE1946	0.00569 )	(46920	CH	20DE1946	C.00031 )	(46916	CH	4MY1947	C.CC034 )
(46764	EV	17JL1937	0.00806 )	(46757	EV	25JL1937	0.00481 )	(46763	EV	23AU1937	C.02029 )
(46768	EV	16MR1938	0.01470 )	(							

*Navicula rotunda* Hust.

*Navicula rotunda* Hustedt, Arch. Hydrobiol., 40:916, pl. 41, fig. 29. 1945.

443 NAROTUND TCT NO OF STATIONS 10

( 1565	GS13	50C1967	0.04563 )	( 1575	GS28	60C1967	C.00129 )	( 1546	LU 1	20C1967	C.01000 )
( 1525	PW 1	20SE1967	0.01393 )	( 1526	MO 1	20SE1967	0.00569 )	( 1527	TR 1	20SE1967	C.01887 )
( 1549	MQ 1	40C1967	0.01370 )	( 1550	MR 1	50C1967	C.01239 )	( 1350	BH 2	19AP1967	C.CC661 )
( 1402	TR 2	6MY1967	0.00541 )	(							

*Navicula salinarum* Grun.

*Navicula salinarum* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):33, pl. 2, fig. 34. 1880.

444	NASALINA	TCT NO OF STATIONS	1
(46916	CH	4MY1947	C.00034 ) (

*Navicula schoenfeldii* Hust.

*Navicula schoenfeldii* Hustedt in: Pascher, Sussw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 301, fig. 520. 1930.

455	NASCHONG	TOT NO OF STATIONS	1
( 1550	MR 1	50C1967	0.01239 ) (

*Navicula scutelloides* Wm. Smith

*Navicula scutelloides* Wm. Smith ex Gregory, Quart. J. Micr. Sci., 4:4, pl. 1, fig. 15. 1856.

445	NASCUTEL TCT NO OF STATIONS		38						
(60973	CH	1876	0.02362 ) ( 3540	CH	11MY1879	0.00466 ) (46920	CH	20DE1946	C.00031 )
(46747	EV	1AU1937	0.00248 ) ( 1245	F 2	11JN1964	0.00346 ) ( 1267	D 6	18AU1964	C.00216 )
( 1274	D 1	17SE1964	0.00469 ) ( 1279	E 1	16SE1964	0.01571 ) ( 1304	F 1	11OC1964	C.00247 )
( 1320	E 4	7NQ1964	0.00207 ) ( 1541	E 2	11CC1967	0.00532 ) ( 1542	E 3	11OC1967	C.01017 )
( 1382	GS 6	10MY1967	0.00278 ) ( 1395	GS19	13MY1967	0.00117 ) ( 1396	GS20	13MY1967	C.00222 )
( 1554	GS 1	30C1967	0.00712 ) ( 1555	GS 2	30C1967	0.00706 ) ( 1556	GS 3	30C1967	C.00521 )
( 1557	GS 4	30C1967	0.00374 ) ( 1558	GS 5	4CC1967	0.00396 ) ( 1565	GS13	50C1967	1.29804 )
( 1567	GS15	50C1967	0.00794 ) ( 1569	GS17	50C1967	0.00149 ) ( 1571	GS19	60C1967	C.00059 )
( 1572	GS20	60C1967	0.00721 ) ( 1573	GS21	60C1967	0.00448 ) ( 1574	GS22	60C1967	C.01438 )
( 1575	GS28	60C1967	0.00387 ) ( 1546	LU 1	20C1967	0.00500 ) ( 1520	HO 1	18SE1967	C.00471 )
( 1530	FR 1	24SE1967	0.03000 ) ( 1550	MR 1	50C1967	C.11151 ) ( 1553	SG 1	60C1967	C.02938 )
( 1426	MS 2	25MY1967	0.01050 ) ( 1427	LU 2	29MY1967	C.08475 ) ( 1350	BH 2	19AP1967	C.00881 )
( 1354	GH 2	25AP1967	0.00173 ) ( 1404	MQ 2	10MY1967	0.03811 ) (			

*Navicula semenoides* Hust.

*Navicula semenoides* Hustedt, Arch. Hydrobiol., 18:163, pl. 5, fig. 8. 1927.

373 NADECUSC TCT NO OF STATIONS			6								
( 1279	E 1	16SE1964	0.00393 )	( 1319	E 3	7NO1964	C.00262 )	( 1343	A 6	19AP1967	C.00069 )
( 1388	GS12	12MY1967	0.01810 )	( 1565	GS13	50C1967	0.29916 )	( 1573	GS21	60C1967	C.00112 )

*Navicula seminuloides* Hust.

*Navicula seminuloides* Hustedt in: A. Schmidt, Atlas Diat., pl. 401, figs. 68-71. 1936.

448 NASEMINQ TCT NO OF STATIONS										5	
( 1286	F 2	15SE1964	C.01095 )	( 1325	F 3	6NO1964	0.00252 )	( 1348	E 5	23AP1967	C.00137 )
( 1567	GS15	50C1967	0.00318 )	( 1521	SH 1	18SE1967	0.00577 )	(			

*Navicula seminulum* Grun.

*Navicula seminulum* Grunow, Verh. Zool.-Bot. Ges. Wien, 10:552, pl. 4, fig. 3. 1860.

446	NASEMINU TCT NO OF STATIONS			26										
(46920	CH	20DE1946	0.00031 )	(46909	CH	MR1947	0.00455 )	( 1278	D 6	18SE1964	C.00384 )			
( 1279	E 1	16SE1964	0.01178 )	( 1285	F 1	15SE1964	C.00582 )	( 1318	E 2	7NO1964	C.00190 )			
( 1348	E 5	23AP1967	0.00137 )	( 1565	GS13	50C1967	8.51840 )	( 1566	GS14	50C1967	C.00183 )			
( 1567	GS15	50C1967	0.00476 )	( 1569	GS17	50C1967	0.00149 )	( 1574	GS22	60C1967	C.01438 )			
( 1546	LU 1	20C1967	0.01501 )	( 1521	SH 1	18SE1967	0.00577 )	( 1522	BH 1	18SE1967	C.00547 )			
( 1523	RA 1	15SE1967	0.00923 )	( 1528	MG 1	20SE1967	0.00569 )	( 1527	TR 1	20SE1967	C.03774 )			
( 1529	KW 1	20SE1967	0.01199 )	( 1545	WL 1	20C1967	0.00676 )	( 1551	ES 1	50C1967	C.00799 )			
( 1552	SM 1	60C1967	0.00660 )	( 1550	MR 1	50C1967	C.49560 )	( 1553	SG 1	60C1967	C.02203 )			
( 1350	BH 2	19AP1967	0.07048 )	( 1354	GH 2	25AP1967	0.00173 )	(						

*Navicula seminulum* var. *intermedia* Hust.

*Navicula seminulum* var. *intermedia* Hustedt, Arch. Hydrobiol., 39:110, figs. 25-28. 1942.

447	NASEMIVI	TOT	NO	OF	STATIONS	1
( 1264	C 1	10AU1964	0.00193	)	(	

*Navicula similis* Krasske

*Navicula similis* Krasske, Bot. Arch., 27:254, fig. 15. 1929.

450	NASIMILI	TCT	NO	OF	STATIONS	3
( 1388	GS12	12MY1967	0.00603	)	( 1565	GS13
		5CC1967	0.01521	)	( 1350	BH 2
		15AP1967	0.00220	)		

*Navicula simplex* Krasske

*Navicula simplex* Krasske, Abh. Ber. Ver. Naturk. Cassel, 56:112, pl. 1, fig. 16. 1925.

459	NASIMPLE	TCT	NO	OF	STATIONS	1
( 1350	BH 2	15AP1967	0.00220	)	(	

*Navicula skabitschewskyi* Kiselev

*Navicula skabitschewskyi* Kiselev (original description not available, cited in Zabelina et al., Opred. Presn. Vod. USSR, p. 279. 1951).

451	NASKABIQ	TCT	NO	OF	STATIONS	1
( 1349	CI 2	15AP1967	0.00359	)	(	

*Navicula stroesei* A. Cleve

*Stauroneis dilatata* Wm. Smith sensu Ströse, Festschr. XXXVII Versamml. Deutsch. Philog. Schulm. Dessau, p. 11, pl. 1, fig. 28. 1884. (non Wm. Smith 1853).

*Navicula tuscula* var. *strösei* Østrup, Danske Diat., p. 84, pl. 1, fig. 28. 1910.

*Navicula strösei* A. Cleve, Acta Forest. Fennica, 22(4):63. 1922.

*Navicula pseudotuscula* Hustedt, Internat. Rev. Hydrobiol., 43:170. 1943.

452	NASTROES	TCT	NO	OF	STATIONS	9
(46758	EV	5JUN1937	0.01426	)	(46764	EV
		17JUL1937	0.04029	)	(46757	EV
		25JUL1937	0.00963	)		
( 1382	GS 6	10MY1967	0.00278	)	( 1388	GS12
		12MY1967	0.01207	)	( 1391	GS15
		12MY1967	0.00479	)		
( 1565	GS13	50C1967	0.00507	)	( 1569	GS17
		50C1967	0.00149	)	( 1574	GS22
		60C1967	0.00288	)		

*Navicula stroemi* Hust.

*Navicula strömi* Hustedt, Arch. Hydrobiol., 22:544, fig. 3. 1931.

453	NASTROMS	TCT	NO	OF	STATIONS	3
(46915	CH	5JUN1947	0.00910	)	(46747	EV
		1AU1937	0.00248	)	( 1565	GS13
		50C1967	0.00208	)		

*Navicula subcostulata* Hust.

*Navicula subcostulata* Hustedt, Abh. Bremen Wiss. Ges., 8/9:386, fig. 13. 1934.

457	NASCCSTU	TCT	NO	OF	STATIONS	1
( 1433	C 3	17JUN1967	0.00646	)	(	

*Navicula subhamulata* Grun.

*Navicula subhamulata* Grunow in: Van Heurck, Syn. Diat. Belgique, p. 106, pl. 13, fig. 14. 1885.

458 NASHAMUL TCT NC CF STATIONS 5											
( 1574	GS22	6CC1967	0.00288 )	( 1545	WL 1	20C1967	0.00676 )	( 1549	MQ 1	40C1967	0.01370 )
( 1350	BH 2	19AP1967	0.00441 )	( 1403	CA 2	10MY1967	0.01308 )	(			

*Navicula subrhynchocephala* Hust.

*Navicula subrhynchocephala* Hustedt, Arch. Hydrobiol., Suppl. 14:156, pl. 1, fig. 11. 1935.

487 NASPECCI TCT NC CF STATIONS 19											
(60973	CH	1876	0.04724 )	(46515	CH	20FE1946	0.00569 )	(46758	EV	5JN1937	C.CC357 )
(46743	EV	20JN1937	0.00428 )	(46770	EV	9JL1937	0.01789 )	(46764	EV	17JL1937	0.06446 )
(46757	EV	25JL1937	0.03370 )	(46763	EV	23AU1937	0.12175 )	(46752	EV	15SE1937	C.C2177 )
(46760	EV	22SE1937	0.00492 )	(46768	EV	16MR1938	0.04410 )	(46762	EV	18MR1938	C.08822 )
(46766	EV	14DE1938	0.01584 )	( 1306	F 3	11CC1964	C.00277 )	( 1557	GS 4	30C1967	C.CC374 )
( 1546	LU 1	20C1967	0.02501 )	( 1350	BH 2	19AP1967	0.00661 )	( 1404	MQ 2	10MY1967	C.05081 )
( 1407	SM 2	14MY1967	0.00597 )	(							

*Navicula subrotundata* Hust.

*Navicula subrotundata* Hustedt, Arch. Hydrobiol., 40:917, pl. 41, figs. 30-33. 1945.

460 NASROTUQ TOT NO OF STATIONS 12											
(46916	CH	4MY1947	C.00034 )	( 1274	C 1	17SE1964	C.00469 )	( 1275	D 2	17SE1964	C.00645 )
( 1348	E 5	23AP1967	0.00137 )	( 1449	C 3	16JL1967	0.00382 )	( 1538	E 5	23SE1967	C.CC552 )
( 1384	GS 8	10MY1967	0.00185 )	( 1565	GS13	50C1967	C.04056 )	( 1574	GS22	60C1967	C.CC575 )
( 1545	WL 1	20C1967	0.00676 )	( 1350	BH 2	19AP1967	0.00881 )	( 1354	GH 2	25AP1967	C.CC345 )

*Navicula subsulcata* Hust.

*Navicula subsulcata* Hustedt, Arch. Hydrobiol., Suppl 15:261, pl. 18, fig. 7. 1938.

526 NASPECAZ TCT NO OF STATIONS 1											
( 1350	BH 2	19AP1967	0.00220 )	(							

*Navicula tantula* Hust.

*Navicula tantula* Hustedt, Internat. Rev. Hydrobiol., 43:162. 1943.

461 NATANTUL TCT NC CF STATIONS 27											
(46763	EV	23AU1937	0.02029 )	( 1272	C* 1	10SE1964	0.00410 )	( 1274	D 1	17SE1964	C.01408 )
( 1275	D 2	17SE1964	0.00645 )	( 1278	D 6	18SE1964	C.00384 )	( 1280	E 2	16SE1964	C.00681 )
( 1281	E 3	16SE1964	0.00392 )	( 1282	E 4	16SE1964	C.01108 )	( 1284	E 6	17SE1964	C.CC318 )
( 1285	F 1	15SE1964	0.01747 )	( 1287	F 3	15SE1964	C.00500 )	( 1303	E 6	130C1964	C.01119 )
( 1322	E 6	7NO1964	0.00333 )	( 1323	F 1	6NO1964	0.00139 )	( 1324	F 2	6NO1964	C.CC233 )
( 1343	A 6	19AP1967	0.00069 )	( 1534	A 6	19SE1967	0.00310 )	( 1538	E 5	23SE1967	C.00552 )
( 1565	GS13	50C1967	0.00507 )	( 1567	GS15	50C1967	C.00476 )	( 1571	GS19	60C1967	C.CC059 )
( 1523	RA 1	15SE1967	0.00923 )	( 1525	PW 1	20SE1967	C.01393 )	( 1545	WL 1	20C1967	C.C1351 )
( 1551	ES 1	50C1967	0.00799 )	( 1550	MR 1	50C1967	0.03717 )	( 1417	HO 2	22MY1967	C.00748 )

*Navicula tridentula* var. *parallela* Krasske

*Navicula tridentula* var. *parallela* Krasske, Abh. Ver. Naturk. Cassel, 56:46, pl. 2, fig. 35. 1926.

462 NATRIDFP TCT NC OF STATIONS 2											
( 1550	MR 1	50C1967	C.C1239 )	( 1404	MC 2	10PY1967	C.01270 )	(			

*Navicula tripunctata* (O. F. Müll.) Bory

*Vibrio tripunctata* O. F. Müller, Animal. Infus., p. 52, pl. 7, fig. 2. 1786.

*Navicula tripunctata* (O. F. Müll.) Bory, Encyclop. Method., p. 563. 1824.

463 NATRIPUN TCT NO OF STATIONS 77

( 3540	CH	11MY1879	0.00932 )	( 3541	CH	1FE1881	0.00978 )	( 46910	CH	OC1945	C.00109 )
( 46921	CH	23NO1945	0.00065 )	( 46917	CH	12JA1946	0.00083 )	( 46914	CH	19AP1946	C.00107 )
( 46905	CH	JA1947	0.00123 )	( 46909	CH	MR1947	0.00455 )	( 46906	CH	MY1947	C.00066 )
( 46758	EV	5JN1937	0.01070 )	( 46764	EV	17JL1937	0.01612 )	( 46768	EV	16MR1938	C.01470 )
( 46762	EV	18MR1938	0.06617 )	( 1232	E 5	16MY1964	0.00174 )	( 1236	C* 1	8JN1964	C.00525 )
( 1240	D 6	10JN1964	0.00767 )	( 1243	E 6	13JN1964	0.00209 )	( 1264	C* 1	10AU1964	C.00386 )
( 1272	C* 1	10SE1964	0.00410 )	( 1273	C* 2	10SE1964	0.01075 )	( 1285	F 1	15SE1964	C.01165 )
( 1301	E 4	13OC1964	0.00442 )	( 1324	F 2	6NO1964	0.00233 )	( 1341	A 3	19AP1967	C.00434 )
( 1345	C 5	25AP1967	0.00195 )	( 1375	E 3	7MY1967	0.00241 )	( 1435	C 7	13JN1967	C.00316 )
( 1504	A 3	28AU1967	0.00247 )	( 1533	A 4	15SE1967	0.00464 )	( 1534	A 6	15SE1967	C.00310 )
( 1536	E 2	24SE1967	0.00273 )	( 1378	GS 2	9MY1967	0.00421 )	( 1379	GS 3	9MY1967	C.00309 )
( 1397	GS21	13MY1967	0.00131 )	( 1555	GS 2	30C1967	0.00353 )	( 1559	GS 7	40C1967	C.00659 )
( 1565	GS13	50C1967	0.00507 )	( 1567	GS15	50C1967	0.00159 )	( 1569	GS17	50C1967	C.00297 )
( 1570	GS18	50C1967	0.01983 )	( 1571	GS19	60C1967	0.00117 )	( 1572	GS20	60C1967	C.00090 )
( 1574	GS22	60C1967	0.01438 )	( 1575	GS28	60C1967	0.00258 )	( 1524	MI 1	20SE1967	C.04378 )
( 1566	LU 1	20C1967	0.01501 )	( 1520	HC 1	18SE1967	0.00471 )	( 1521	SH 1	18SE1967	C.01731 )
( 1522	BH 1	18SE1967	0.02918 )	( 1523	RA 1	19SE1967	0.00923 )	( 1526	MO 1	20SE1967	C.06258 )
( 1527	TR 1	20SE1967	0.00629 )	( 1529	KW 1	20SE1967	0.02398 )	( 1531	CH 1	25SE1967	C.04227 )
( 1545	WL 1	20C1967	0.02027 )	( 1548	CA 1	30C1967	0.02544 )	( 1549	MQ 1	40C1967	0.01370 )
( 1551	ES 1	50C1967	0.00799 )	( 1550	MR 1	50C1967	0.03717 )	( 1553	SG 1	60C1967	C.00734 )
( 1428	MU 2	29MY1967	0.03314 )	( 1426	MS 2	29MY1967	0.04199 )	( 1427	LU 2	29MY1967	0.01211 )
( 1417	MO 2	22MY1967	0.02617 )	( 1418	SH 2	22MY1967	0.01555 )	( 1350	BH 2	19AP1967	C.14097 )
( 1399	PW 2	5MY1967	0.00680 )	( 1401	MC 2	6MY1967	0.06468 )	( 1402	TR 2	6MY1967	C.01624 )
( 1400	SB 2	6MY1967	0.07148 )	( 1352	KW 2	21AP1967	0.00859 )	( 1354	GH 2	25AP1967	C.00863 )
( 1429	WL 2	25MY1967	0.05308 )	( 1403	CA 2	10MY1967	0.02615 )	( 1406	GB 2	13MY1967	C.00809 )
( 1422	GA 2	23MY1967	0.01022 )	( 1423	WA 2	25MY1967	0.00428 )	(			

*Navicula tripunctata* var. *cuneata* (Lauby) comb. nov.

*Navicula gracilis* var. *cuneata* Lauby, Bull. Serv. Carte Geol. France, 125:145, pl. 10, fig. 8. 1910.

464 NATRIPC TCT NC CF STATIONS 6

( 46915	CH	20FE1946	0.01707 )	( 46919	CH	5JN1947	0.00455 )	( 1272	C* 1	10SE1964	C.00410 )
( 1575	GS28	60C1967	0.00129 )	( 1524	MI 1	20SE1967	0.06567 )	( 1350	BH 2	19AP1967	C.00661 )

*Navicula tripunctata* var. *schizonemoides* (V. H.) Patr.

*Schizonema neglectum* Thwaites, Annals Mag. Nat. Hist., Ser. 2, 1:171, pl. 12(J), figs. 1-4. 1848.

*Navicula gracilis* var. *schizonemoides* Van Heurck, Syn. Diat. Belgique, p. 83. 1885.

*Navicula tripunctata* var. *schizonemoides* (V. H.) Patrick, Proc. Acad. Nat. Sci. Philadelphia, 111:106, pl. 7, fig. 2. 1959.

465 NATRIPVS TCT NC CF STATIONS 5

( 46922	CH	21AU1947	0.00097 )	( 1279	E 1	16SE1964	0.00393 )	( 1346	C 7	21AP1967	C.00134 )
( 1557	GS 4	30C1967	0.00374 )	( 1558	GS 5	40C1967	0.00396 )	(			

*Navicula tuscula* Ehr.

*Navicula tuscula* Ehrenberg, Ber. Akad. Wiss. Berlin, 1840:215. 1840.

466 NATUSCUL TCT NC CF STATIONS 25

( 46973	CH	1876	0.02262 )	( 3541	CH	1FE1881	0.03513 )	( 46921	CH	23NO1945	C.00065 )
( 46917	CH	12JA1946	0.00028 )	( 46914	CH	19AP1946	0.00107 )	( 46924	CH	10MY1946	C.00071 )
( 46923	CH	22NO1946	0.00437 )	( 46920	CH	20FE1946	C.00031 )	( 46922	CH	21AU1947	C.00291 )
( 46743	EV	20JN1937	0.00428 )	( 46745	EV	3JL1937	0.02090 )	( 46757	EV	25JL1937	C.00481 )
( 46747	EV	1AU1937	0.01238 )	( 46763	EV	23AU1937	C.04058 )	( 46752	EV	15SE1937	C.04354 )
( 46750	EV	24SE1937	0.00943 )	( 1244	F 1	11JN1964	0.00110 )	( 1266	D 3	18AU1964	C.00351 )
( 1541	E 2	11OC1967	0.00532 )	( 1565	GS13	50C1967	0.00507 )	( 1574	GS22	60C1967	C.00575 )
( 1527	TR 1	20SE1967	0.00629 )	( 1545	WL 1	20C1967	0.00676 )	( 1550	MR 1	50C1967	C.01239 )
( 1401	MO 2	6MY1967	0.00588 )	(							

*Navicula tuscula* fo. *obtusa* Hust.

*Navicula tuscula* fo. *obtusa* Hustedt in: Pascher, Süßw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 309. 1930.

467 NATUSCVN TCT NO CF STATIONS 17

( 3540	CH	11MY1879	0.00466 )	(46763	EV	23AU1937	0.02029 )	( 1268	E 2	15AU1964	0.00274 )
( 1285	F 1	15SE1964	0.00582 )	( 1541	E 2	11OC1967	0.00532 )	( 1394	GS18	13MY1967	0.00172 )
( 1555	GS 2	30C1967	0.00353 )	( 1560	GS 8	40C1967	0.00472 )	( 1567	GS15	50C1967	0.00159 )
( 1574	GS22	60C1967	0.00863 )	( 1530	FR 1	24SE1967	0.03000 )	( 1545	WL 1	20C1967	0.00676 )
( 1553	SG 1	60C1967	0.00734 )	( 1426	MS 2	29MY1967	0.01050 )	( 1403	CA 2	10MY1967	0.00308 )
( 1404	MQ 2	10MY1967	0.01270 )	( 1405	ES 2	12MY1967	0.00645 )	(			

*Navicula tuscula* fo. *rostrata* Hust.

*Navicula tuscula* fo. *rostrata* Hustedt in: Pascher, Süßw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 308. 1930.

469 NATUSCVB TOT NO CF STATIONS 1

( 1404	MQ 2	10MY1967	0.01270 )	(
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*Navicula vanheurckii* Patr.

*Navicula vanheurckii* Patrick in: Patrick and Reimer, Acad. Nat. Sci. Philadelphia Monogr., 13:491, pl. 46, fig. 22. 1966.

472 NAVANFEU TCT NO OF STATIONS 7

( 1275	D 2	17SE1964	0.00645 )	( 1388	GS12	12MY1967	0.01207 )	( 1389	GS13	12MY1967	0.00516 )
( 1392	GS16	12MY1967	0.00925 )	( 1396	GS20	13MY1967	0.00074 )	( 1554	GS 1	30C1967	0.00356 )
( 1545	WL 1	20C1967	0.00676 )	(							

*Navicula ventosa* Hust.

*Navicula ventosa* Hustedt, Abh. Naturw. Ver. Bremen, 34:281, fig. 28-31. 1957.

473 NAVENTOS TCT NO CF STATIONS 4

( 1544	MU 1	20C1967	0.00238 )	( 1527	TR 1	20SE1967	0.00629 )	( 1550	FR 1	50C1967	0.01239 )
( 1354	GH 2	25AP1967	0.00173 )	(							

*Navicula ventralis* Krasske

*Navicula ventralis* Krasske, Bot. Arch., 3:197, fig. 3. 1923.

474 NAVENTRA TCT NO OF STATIONS 2

( 1550	MR 1	50C1967	0.00195 )	( 1404	MQ 2	10MY1967	0.01270 )	(
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*Navicula viridula* (Kütz.) Kütz.

*Frustulia viridula* Kütz. in: Linnaea, 8:551, pl. 13, fig. 12. 1833.

*Navicula viridula* (Kütz.) Kütz. in: Bacill., p. 91, pl. 30, fig. 47. 1844.

475 NAVIRIDU TCT NO CF STATIONS 25

(46917	CH	12JA1946	0.00028 )	(46523	CH	22NO1946	0.00219 )	(46920	CH	20DE1946	0.00031 )
(46907	CH	JL1947	0.00099 )	(46757	EV	25JL1937	0.00481 )	(46747	EV	1AU1937	0.00248 )
( 1341	A 3	19AP1967	0.00108 )	( 1448	A 6	10JL1967	0.00354 )	( 1533	A 4	19SE1967	0.00464 )
( 1566	GS14	50C1967	0.00183 )	( 1567	GS15	50C1967	0.00159 )	( 1569	GS17	50C1967	0.00149 )
( 1522	BH 1	18SE1967	0.00729 )	( 1531	GH 1	25SE1967	0.01651 )	( 1545	WL 1	20C1967	0.00676 )
( 1550	MR 1	50C1967	0.03717 )	( 1553	SG 1	60C1967	0.01469 )	( 1426	MS 2	29MY1967	0.05249 )
( 1427	LU 2	29MY1967	0.01211 )	( 1417	HO 2	22MY1967	0.00748 )	( 1350	BH 2	19AP1967	0.01982 )
( 1401	MO 2	6MY1967	0.00588 )	( 1354	GH 2	25AP1967	0.00518 )	( 1349	CI 2	19AP1967	0.00359 )
( 1422	GA 2	23MY1967	0.00511 )	(							

*Navicula viridula* var. *avenacea* (Bréb.) V. H.

*Navicula* (*viridula* Kg. var.?) *avenacea* de Brébisson ex Grunow in: Schneider, Naturw. Beitr. Kenntn. Kaukasusländer, p. 112, pl. 4, fig. 23. 1878.

*Navicula viridula* var. *avenacea* (Bréb.) Van Heurck, Syn. Diat. Belgique, p. 84. 1885.

476 NAVIRIVA TCT NO OF STATIONS 8											
(46924	CH	10MY1946	0.00071 )	(46922	CH	21AU1947	0.00048 )	( 1559	GS 7	40C1967	C.CC350 )
( 1546	LU 1	20C1967	0.00500 )	( 1427	LU 2	29MY1967	0.01211 )	( 1350	BH 2	19AP1967	C.0C881 )
( 1354	GH 2	25AP1967	0.00173 )	( 1422	GA 2	23MY1967	0.02044 )	(			

*Navicula viridula* var. *linearis* Hust.

*Navicula viridula* var. *linearis* Hustedt, Arch. Hydrobiol., Suppl. 15:264, pl. 19, figs. 1-2. 1937.

478 NAVIRIVL TCT NO OF STATIONS 6											
( 1316	D 6	9NO1964	0.00378 )	( 1355	GS19	13MY1967	0.00117 )	( 1571	GS19	60C1967	C.0CC59 )
( 1575	GS28	60C1967	0.00129 )	( 1520	HO 1	18SE1967	0.00471 )	( 1427	LU 2	29MY1967	0.01211 )

*Navicula viridula* var. *rostellata* (Kütz.) Cleve

*Navicula rostellata* Kützing, Bacill., p. 95, pl. 3, fig. 65. 1844.

*Navicula viridula* var. *rostellata* (Kütz.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 27(3):15. 1895.

479 NAVIRIVR TOT NO OF STATIONS 5											
(46758	EV	5JN1937	0.00357 )	( 1571	GS19	60C1967	0.00059 )	( 1550	MR 1	50C1967	C.C1239 )
( 1350	BH 2	19AP1967	0.00220 )	( 1421	CH 2	23MY1967	0.01735 )	(			

*Navicula vulpina* Kütz.

*Navicula vulpina* Kützing, Bacill., p. 92, pl. 3, fig. 43. 1844.

480 NAVULPIN TCT NO OF STATIONS 2									
( 1388	GS12	12MY1967	0.00603 )	( 1403	CA 2	10MY1967	C.C1308 )	(	

*Navicula wittrockii* (Lagerst.) A. Cleve

*Stauroneis wittrockii* Lagerstedt, Bih. K. Svenska Vet.-Akad. Handl., 1(14):38, pl. 2, fig. 15. 1873.

*Navicula wittrockii* (Lagerst.) A. Cleve, Soc. Sci. Fennica Comm. Biol., 4(14):86. 1934.

481 NAVITTRO TCT NO CF STATIONS												7
( 1285	F 1	15SE1964	0.00582 )	( 1389	GS13	12MY1967	0.00258 )	( 1396	GS20	13MY1967	C.00074 )	
( 1565	GS13	50C1967	0.01014 )	( 1567	GS15	50C1967	C.00159 )	( 1571	GS19	6CC1967	C.00059 )	
( 1550	MR 1	50C1967	0.01239 )	(								

*Navicula zanoni* Hust.

*Navicula zanoni* Hustedt, Inst. Parcs Nat. Congo Belge, Expl. Parc. Nat. Albert, (Damas 1935-1936), Facs. 8:92, pl. 5, figs. 1-5. 1949.

485 NASPECGE TCT NO OF STATIONS 35											
(46923	CH	22NO1546	0.00219 )	( 1229	D 5	14MY1964	0.00423 )	( 1439	B 6	5JN1964	C.CC200 )
( 1244	F 1	11JN1964	0.00587 )	( 1245	F 2	11JN1964	0.01383 )	( 1246	F 3	11JN1964	C.C1793 )
( 1256	E 2	14JL1964	0.01282 )	( 1258	F 1	6JL1964	C.00944 )	( 1259	F 2	6JL1964	C.02479 )
( 1260	F 3	6JL1964	0.02674 )	( 1268	E 2	15AU1964	0.00274 )	( 1284	E 6	17SE1964	C.00635 )
( 1285	F 1	15SE1964	0.01747 )	( 1287	F 3	15SE1964	C.00500 )	( 1302	E 5	130C1964	C.00405 )
( 1305	F 2	11OC1964	0.00173 )	( 1323	F 1	6NO1964	C.00418 )	( 1324	F 2	6NO1964	C.00466 )
( 1346	C 7	21AP1967	C.00134 )	( 1381	GS 5	10MY1967	C.00239 )	( 1383	GS 7	10MY1967	C.0C535 )
( 1388	GS12	12MY1967	0.02413 )	( 1390	GS14	12MY1967	C.02936 )	( 1393	GS17	13MY1967	C.01096 )
( 1394	GS18	13MY1967	C.00688 )	( 1564	GS12	50C1967	C.00165 )	( 1566	GS14	50C1967	C.CC183 )
( 1567	GS15	50C1967	0.00159 )	( 1547	MS 1	20C1967	C.00798 )	( 1546	LU 1	20C1967	C.0C500 )
( 1520	HO 1	18SE1967	0.00471 )	( 1527	TR 1	20SE1967	C.00629 )	( 1545	WL 1	20C1967	C.0C676 )
( 1426	MS 2	29MY1967	0.01050 )	( 1403	CA 2	10MY1967	0.05231 )				

Species incertae sedis

*Navicula* (*viridula* var.?)



477 NAVIRIVB TCT NC OF STATIONS 4											
( 1521	SH 1	18SE1967	0.00577 )	( 1522	BH 1	18SE1967	0.02370 )	( 1550	MR 1	50C1967	C.01239 )
( 1417	HO 2	22MY1967	0.00374 )	(							

*Navicula (tuscua var. 1)*

468 NATUSCVA TCT NC OF STATIONS 1									
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( 1388	GS12	12MY1967	0.00603 )	(							
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*Navicula (tuscua var. 3)*

471 NATUSCFR TCT NO OF STATIONS 5									
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(46758	EV	5JN1937	0.00357 )	(46764	EV	17JL1937	0.01612 )	( 1574	GS22	60C1967	C.CC288 )
( 1527	TR 1	20SE1967	0.00629 )	( 1350	BH 2	19AP1967	0.00220 )	(			

*Navicula sp. (aff. N. lacustris)*

397 NALACUSQ TCT NO OF STATIONS 12									
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(46924	CH	10MY1946	0.00071 )	(46520	CH	20DE1946	0.00031 )	(46916	CH	4MY1947	C.CCC34 )
(46906	CH	MY1947	0.00133 )	(46922	CH	21AU1947	0.00388 )	( 1544	MU 1	20C1967	0.00238 )
( 1546	LU 1	20C1967	0.01000 )	( 1521	SH 1	18SE1967	0.00577 )	( 1527	TR 1	20SE1967	C.C6918 )
( 1529	KW 1	20SE1967	0.01199 )	( 1402	TR 2	6MY1967	0.00541 )	( 1429	WL 2	29MY1967	C.01062 )

*Navicula "pygmaea var. producta" (not validly described)*

435 NAPIGMVP TCT NO OF STATIONS 3									
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( 1264	C* 1	10AU1964	0.00193 )	( 1533	A 4	19SE1967	0.00464 )	( 1396	GS20	13MY1967	C.CC074 )
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*Navicula sp. #3.*

483 NASPECDC TCT NC OF STATIONS 1									
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( 1265	C* 2	10AU1964	0.00224 )	(							
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*Navicula sp. #4.*

484 NASPECOD TOT NO OF STATIONS 3									
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( 1388	GS12	12MY1967	0.00603 )	( 1565	GS13	50C1967	0.02028 )	( 1566	GS14	50C1967	C.CC183 )
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*Navicula sp. #8.*

486 NASPECOH TCT NC OF STATIONS 11									
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(46907	CH	JL1947	0.00049 )	( 1304	F 1	11OC1964	0.00247 )	( 1356	GS20	13MY1967	C.CC074 )
( 1545	WL 1	20C1967	0.10812 )	( 1552	SM 1	60C1967	0.01321 )	( 1550	MR 1	50C1967	C.C3717 )
( 1428	MU 2	25MY1967	0.00301 )	( 1426	MS 2	29MY1967	C.01050 )	( 1427	LU 2	29MY1967	C.C6053 )
( 1350	BH 2	19AP1967	0.01542 )	( 1402	TR 2	6MY1967	0.02707 )	(			

*Navicula sp. #10.*

488 NASPECGJ TCT NC OF STATIONS 1									
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( 1343	A 6	19AP1967	C.CC069 )	(							
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*Navicula sp. #12.*

490 NASPECCL TCT NC OF STATIONS 37									
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(46919	CH	5JN1947	0.27162 )	(46758	EV	5JN1937	0.00713 )	(46743	EV	20JN1937	C.CC428 )
(46770	EV	9JL1937	0.02385 )	(46764	EV	17JL1937	0.20951 )	(46757	EV	25JL1937	C.12C36 )
(46747	EV	1AU1937	0.00743 )	(46763	EV	23AU1937	0.16234 )	(46752	EV	15SE1937	C.17414 )
(46750	EV	24SE1937	0.01414 )	(46748	EV	13OC1937	0.10675 )	(46767	EV	27OC1937	0.01160 )
(46749	EV	12MR1938	0.01214 )	(46768	EV	16MR1938	0.10290 )	(46762	EV	18MR1938	C.C2206 )
(46751	EV	30MR1938	0.01117 )	(46761	EV	27MY1938	0.00818 )	( 1258	F 1	6JL1964	0.00472 )
( 1260	F 3	6JL1964	0.00191 )	( 1540	C 5	40C1967	C.CC496 )	( 1541	E 2	11OC1967	C.C1597 )

( 1387	GS11	12MY1967	0.00396 )	( 1394	GS18	13MY1967	0.00172 )	( 1554	GS 1	30C1967	0.00356 )
( 1559	GS 7	40C1967	0.00350 )	( 1565	GS13	50C1967	0.01014 )	( 1574	GS22	60C1967	0.00863 )
( 1544	MU 1	20C1967	0.00715 )	( 1547	MS 1	20C1967	0.00798 )	( 1546	LU 1	20C1967	0.04001 )
( 1526	MO 1	20SE1967	0.01138 )	( 1527	TR 1	20SE1967	0.00629 )	( 1529	KW 1	20SE1967	0.02398 )
( 1545	WL 1	2CC1967	0.02702 )	( 1551	ES 1	50C1967	0.01598 )	( 1552	SM 1	60C1967	0.00660 )
( 1550	MR 1	50C1967	0.02478 )	(							

### Navicula sp. #13.

491 NASPECCM TCT NO OF STATIONS 5

(46747	EV	1AU1937	0.00248 )	( 1285	F 1	15SE1964	0.00582 )	( 1565	GS13	50C1967	0.01521 )
( 1527	TR 1	20SE1967	0.00629 )	( 1403	CA 2	10MY1967	0.01308 )	(			

### Navicula sp. #14.

492 NASPECCN TCT NO OF STATIONS 2

( 1286	F 2	15SE1964	0.01095 )	( 1527	TR 1	20SE1967	0.01258 )	(			
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### Navicula sp. #15.

493 NASPECCQ TCT NO OF STATIONS 1

( 1522	BH 1	18SE1967	0.00547 )	(			
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### Navicula sp. #18.

495 NASPECCR TCT NO OF STATIONS 1

( 1545	WL 1	2CC1967	0.00676 )	(			
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### Navicula sp. #19.

496 NASPECCS TCT NO OF STATIONS 27

(46921	CH	23NO1945	0.00065 )	(46517	CH	12JA1946	0.00166 )	(46915	CH	20FE1946	0.00569 )
(46914	CH	19AP1946	0.00107 )	(46524	CH	10MY1946	0.00141 )	(46923	CH	22NO1946	0.00219 )
(46920	CH	20DE1946	0.00092 )	(46519	CH	5JN1947	0.00455 )	(46922	CH	21AU1947	0.00145 )
(46764	EV	17JL1937	0.00806 )	(46747	EV	1AU1937	0.00248 )	(46763	EV	23AU1937	0.02029 )
(46744	EV	60C1937	0.00975 )	(46768	EV	16MR1938	0.01470 )	(46762	EV	18MR1938	0.02206 )
( 1387	GS11	12MY1967	0.00396 )	( 1388	GS12	12MY1967	0.00603 )	( 1556	GS 3	30C1967	0.00521 )
( 1565	GS13	50C1967	0.02028 )	( 1566	GS14	50C1967	0.00183 )	( 1567	GS15	50C1967	0.00159 )
( 1574	GS22	60C1967	0.01151 )	( 1546	LU 1	20C1967	0.02001 )	( 1531	GH 1	25SE1967	0.00845 )
( 1550	MR 1	50C1967	0.01239 )	( 1351	MI 2	21AP1967	0.00310 )	( 1350	BH 2	19AP1967	0.00220 )

### Navicula sp. #22.

498 NASPECCV TCT NO OF STATIONS 2

(46906	CH	MY1947	0.00066 )	( 1285	F 1	15SE1964	0.00582 )	(			
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### Navicula sp. #23.

499 NASPECCW TCT NO OF STATIONS 15

(46758	EV	5JN1937	0.00713 )	(46764	EV	17JL1937	0.00806 )	(46763	EV	23AU1937	0.10146 )
(46750	EV	24SE1937	0.00471 )	(46767	EV	27GC1937	0.00387 )	(46762	EV	18MR1938	0.06617 )
( 1451	C 7	16JL1967	0.00197 )	( 1542	E 3	11CC1967	0.00509 )	( 1546	LU 1	20C1967	0.01000 )
( 1545	WL 1	20C1967	0.08109 )	( 1550	MR 1	50C1967	0.01239 )	( 1426	PS 2	25MY1967	0.02100 )
( 1354	GH 2	25AP1967	0.00173 )	( 1407	SM 2	14MY1967	0.00597 )	( 1423	WA 2	25MY1967	0.00428 )

### Navicula sp. #24.

500 NASPECCX TCT NO OF STATIONS 5

(46917	CH	12JA1946	0.00028 )	(46907	CH	JL1947	0.00049 )	(46743	EV	20JN1937	0.00428 )
( 1537	E 3	24SE1967	0.00431 )	( 1541	E 2	110C1967	0.00532 )	(			

*Navicula* sp. #25.

501 NASPECCY TCT NO OF STATIONS 1  
( 1541 E 2 11OC1967 0.00532 ) (

*Navicula* sp. #26.

502 NASPEC0Z TCT NO OF STATIONS 1  
(46906 CH MY1947 0.00066 ) (

*Navicula* sp. #27.

503 NASPECAA TCT NO OF STATIONS 5  
(46910 CH OC1945 0.00109 ) (46764 EV 17JL1937 0.01612 ) (46763 EV 23AU1937 0.04058 )  
( 1390 GS14 12MY1967 0.00587 ) ( 1545 WL 1 20C1967 0.00676 ) (

*Navicula* sp. #29.

504 NASPECAC TCT NO OF STATIONS 4  
(46757 EV 25JL1937 0.00481 ) (46752 EV 15SE1937 0.02177 ) (46768 EV 16MR1938 0.01470 )  
( 1544 MU 1 20C1967 0.00953 ) (

*Navicula* sp. #30.

505 NASPECAD TCT NO OF STATIONS 1  
(46757 EV 25JL1937 0.00481 ) (

*Navicula* sp. #31.

506 NASPECAE TCT NO OF STATIONS 1  
(46758 EV 5JN1937 0.00357 ) (

*Navicula* sp. #32.

507 NASPECAF TCT NO OF STATIONS 1  
(46767 EV 27OC1937 0.00387 ) (

*Navicula* sp. #33.

508 NASPECAG TCT NO OF STATIONS 1  
(46763 EV 23AU1937 0.02025 ) (

*Navicula* sp. #34.

509 NASPECAH TCT NO OF STATIONS 6  
( 1389 GS13 12MY1967 0.00258 ) ( 1574 GS22 60C1967 0.00288 ) ( 1550 MR 1 50C1967 0.01239 )  
( 1350 BH 2 19AP1967 0.00220 ) ( 1400 SB 2 6MY1967 0.00596 ) ( 1429 WL 2 29MY1967 0.01062 )

*Navicula* sp. #35.

510 NASPECAI TCT NO OF STATIONS 1  
( 1554 GS 1 3CC1967 0.00356 ) (

*Navicula* sp. #36.

511 NASPECAJ TCT NO OF STATIONS 2  
( 1565 GS13 50C1967 0.01014 ) ( 1546 LU 1 20C1967 0.00500 ) (

*Navicula* sp. #37.

512	NASPECAK	TCT NO OF STATIONS	1
( 1565	GS13	50C1967	0.00507 ) (

*Navicula* sp. #38.

513	NASPECAL	TCT NO OF STATIONS	2
( 1565	GS13	50C1967	0.04056 ) ( 1350 BH 2 19AP1967 0.00661 ) (

*Navicula* sp. #39.

514	NASPECAM	TCT NO OF STATIONS	2
( 1565	GS13	50C1967	0.01521 ) ( 1350 BH 2 19AP1967 0.00441 ) (

*Navicula* sp. #40.

515	NASPECAN	TCT NO OF STATIONS	3
( 1567	GS15	50C1967	0.00159 ) ( 1426 MS 2 29MY1967 0.01050 ) ( 1354 GH 2 25AP1967 0.00173 )

*Navicula* sp. #41.

516	NASPECAC	TCT NO OF STATIONS	1
( 1574	GS22	60C1967	0.00288 ) (

*Navicula* sp. #42.

517	NASPECAP	TCT NO OF STATIONS	1
( 1546	LU 1	20C1967	0.00500 ) (

*Navicula* sp. #43.

518	NASPECAQ	TCT NO OF STATIONS	6
( 1526	MO 1	20SE1967	0.00569 ) ( 1527 TR 1 20SE1967 0.00629 ) ( 1550 MR 1 50C1967 0.03717 )
( 1417	HO 2	22MY1967	0.00374 ) ( 1350 BH 2 19AP1967 0.00220 ) ( 1402 TR 2 6MY1967 0.00541 )

*Navicula* sp. #44.

519	NASPECAR	TCT NO OF STATIONS	2
( 1545	WL 1	20C1967	0.10136 ) ( 1350 BH 2 19AP1967 0.00220 ) (

*Navicula* sp. #45.

520	NASPECAS	TCT NO OF STATIONS	1
( 1545	WL 1	20C1967	0.00676 ) (

*Navicula* sp. #46.

521	NASPECAT	TCT NO OF STATIONS	2
( 1545	WL 1	20C1967	0.00676 ) ( 1350 BH 2 19AP1967 0.00220 ) (

*Navicula* sp. #47.

522	NASPECAU	TCT NO OF STATIONS	1
( 1550	MR 1	50C1967	0.01239 ) (

*Navicula* sp. #48.

523	NASPECAV	TCT NO OF STATIONS	1
( 1550	MR 1	50C1967	0.01239 ) (

*Navicula* sp. #49.

524 NASPECAM TGT NO OF STATIONS 1  
( 1550 MR 1 5GC1967 0.04956 ) (

*Navicula* sp. #50.

525 NASPECAX TGT NO CF STATIONS 1  
( 1550 MR 1 5GC1967 0.01239 ) (

*Navicula* sp. #53.

527 NASPECBA TGT NO CF STATIONS 1  
( 1350 BH 2 19AP1967 0.00441 ) (

*Navicula* sp. #54.

528 NASPECBB TGT NO CF STATIONS 2  
( 1350 BH 2 19AP1967 C.0C220 ) ( 1405 ES 2 12MY1967 0.0C645 ) (

*Navicula* sp. #55.

529 NASPECBC TGT NO OF STATIONS 2  
( 1422 GA 2 23MY1967 C.01022 ) ( 1423 WA 2 25MY1967 C.00428 ) (

Genus *Neidium* Pfitz.

Pfitzer, Bot. Abh. Geb. Morph. Physiol., 1(2):39. 1871.

In most instances members of the genus *Neidium* comprise a minor component of epipellic communities in freshwater. Probably none of the species may be classified as euplanktonic but occasional specimens are found in plankton collections. Members of the genus are very rare in our collections, and those noted come from nearshore localities.

*Neidium affine* (Ehr.) Pfitz.

*Navicula affinis* Ehrenberg, Abh. Akad. Wiss. Berlin, 1841:417, pl. 2(2), fig. 7. 1843.

*Neidium affine* (Ehr.) Pfitzer, Bot. Abh. Geb. Morph. Physiol., 1(2):39. 1871.

530 NEAFFINE TOT NO OF STATIONS 7

(466905	CH	MR1947	0.00455 )	(46506	CH	MY1947	0.00066 )	(46758	EV	5JN1937	C.C1426 )
(46747	EV	1AU1937	0.00248 )	(46752	EV	155E1937	0.04354 )	(46762	EV	18MR1938	C.C2206 )
(46759	EV	19MY1938	0.00338 )								

*Neidium affine* var. *humerus* Reim.

*Neidium affine* var. *humerus* Reimer, Proc. Acad. Nat. Sci. Philadelphia, 111:12, pl. 4, fig. 3. 1959.

531 NEAFFIVH TOT NO OF STATIONS 4

(46764	EV	17JL1937	0.00806 )	(46765	EV	3CAU1937	0.00558 )	(46762	EV	18MR1938	C.C2206 )
( 1565	GS13	5CC1967	0.00507 )								

*Neidium binode* (Ehr.) Hust.

*Navicula binodis* Ehrenberg, Ber. Akad. Wiss. Berlin, 1840:212. 1840.

*Neidium binodis* (Ehr.) Hustedt, Arch. Hydrobiol., 40:933. 1945.

532 NEBINODE TOT NO OF STATIONS 1

(46757	EV	25JL1937	C.CC481 )
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*Neidium bisulcatum* (Lagerst.) Cleve

*Navicula bisulcata* Lagerstedt, Bih. K. Svenska Vet.-Akad. Handl., 1(14):31, pl. 1, fig. 8. 1873.

*Neidium bisulcatum* (Lagerst.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):68. 1894.

533 NEBISULC TOT NO OF STATIONS 1

( 1350	BH 2	19AP1967	0.00220 )
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*Neidium bisulcatum* var. *baicalense* (Skv. and Meyer) Reim.

*Neidium bisulcatum* fo. *baicalensis* Skvortzow and Meyer, Proc. Sungaree River Biol. Sta., 1(5):14, pl. 1, fig. 50. 1928.

*Neidium bisulcatum* var. *baicalensis* (Skv. and Meyer) Reimer, Proc. Acad. Nat. Sci. Philadelphia, 111:18, pl. 2, fig. 2. 1959.

534 NEBISVBC TOT NO OF STATIONS 1

(46758	EV	5JN1937	0.00357 )
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*Neidium calvum* Østr.

*Neidium calvum* Østrup, Danske Diat., p. 20, pl. 1, fig. 11. 1910.

535 NECALVUM TCT AC CF STATIONS 1  
(46760 EV 22SE1537 0.00492 ) (

*Neidium dubium* (Ehr.) Cleve

*Navicula dubia* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:418, pl. 2(2), fig. 8. 1843.  
*Neidium dubium* (Ehr.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):70. 1894.

536 NEDUBIUM TCT AC CF STATIONS 3  
(46909 CH MR1947 0.00455 ) ( 1258 F 1 6JL1964 0.00236 ) ( 1522 BH 1 18SE1967 C.00182 )

*Neidium dubium* fo. *constrictum* Hust.

*Neidium dubium* fo. *constricta* Hustedt in: Pascher, Süßw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 246, fig. 384b. 1930.

537 NEDUBIFC TOT NO OF STATIONS 9  
( 3540 CH 11MY1879 0.00466 ) (46758 EV 5JN1937 0.00713 ) (46768 EV 16MR1938 C.01470 )  
(46756 EV 27AP1938 0.00168 ) ( 1240 D 6 10JN1964 0.00153 ) ( 1568 GS16 50C1967 C.00144 )  
( 1574 GS22 6CC1967 0.01151 ) ( 1427 LU 2 25MY1967 0.01211 ) ( 1407 SM 2 14MY1967 0.00597 )

*Neidium iridis* (Ehr.) Cleve

*Navicula iridis* Ehrenberg, Abh. Akad. Wiss. Berlin, 1841:418, pl. 4(1), fig. 2. 1843.  
*Neidium iridis* (Ehr.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):69. 1894.

538 NEIRIDIS TCT NO CF STATIONS 1  
( 1426 MS 2 25MY1967 0.01050 ) (

*Neidium iridis* var. *amphigomphus* (Ehr.) A. Mayer

*Navicula amphigomphus* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:417, pl. 3(1), fig. 8. 1843.  
*Neidium iridis* var. *amphigomphus* (Ehr.) A. Mayer. Denkschr. Bayer. Bot. Ges. Regensburg, 13:30. 1917.

539 NEIRIDVA TCT NO OF STATIONS 1  
( 1567 GS15 50C1967 0.00159 ) (

*Neidium iridis* var. *vernalis* Reichelt

*Neidium iridis* var. *vernalis* Reichelt, Sitzungsber. Naturf. Ges. Leipzig, 24:8. 1897.

540 NESPECGB TCT AC CF STATIONS 8  
(46915 CH 20FE1946 0.00569 ) (46509 CH MR1947 0.00911 ) (46907 CH JL1947 C.00049 )  
(46758 EV 5JN1937 0.00357 ) (46764 EV 17JL1937 0.00806 ) (46757 EV 25JL1937 C.00481 )  
(46747 EV 1AU1937 0.00743 ) ( 1565 GS13 50C1967 0.00507 ) (

*Neidium kozłowi* Mereschk.

*Neidium kozłowi* Mereschkowsky, Arb. Exped. Kais. Russischen Geogr. Ges., 1899-1901, Vol. 8, p. 16, fig. 7. 1906.

544 NESPECCE TCT NO OF STATIONS 1  
( 1388 GS12 12MY1967 0.00603 ) (

*Neidium ladogensense* (Cleve) comb. nov.

*Navicula ladogensis* Cleve, Acta Soc. Fauna Fl. Fennica, 8(2):35, pl. 2, fig. 3. 1891.

Coll: 1388.

*Neidium saccoense* Reim.

*Neidium saccoense* Reimer in: Patrick and Reimer, Acad. Nat. Sci. Philadelphia Monogr., 13:402, pl. 37, fig. 3. 1966.

Coll: 1813.

### Species incertae sedis

*Neidium* sp. #3.

541 NESPECCO TCT NO OF STATIONS 18

(60973	CH	1876	0.04724 )	( 3541	CF	1FE1881	C.00578 )	(46523	CH	22NO1946	C.CC219 )
(46920	CH	20DE1946	0.00031 )	(46758	EV	5JN1937	C.00713 )	(46770	EV	9JL1937	C.CC596 )
(46757	EV	25JL1937	0.00481 )	(46763	EV	23AU1937	C.04058 )	(46752	EV	15SE1937	C.02177 )
( 1541	E 2	11GC1967	0.00532 )	( 1571	GS19	60C1967	C.00059 )	( 1575	GS28	60C1967	C.CC129 )
( 1544	MU 1	2CC1967	0.00238 )	( 1521	SH 1	18SE1967	C.00577 )	( 1527	TR 1	20SE1967	C.02516 )
( 1530	FR 1	24SE1967	C.01000 )	( 1545	WL 1	2CC1967	C.00676 )	( 1553	SG 1	60C1967	C.CC734 )

*Neidium* sp. #4.

542 NESPECCO TCT NO OF STATIONS 2

(46747	EV	1AU1937	0.00248 )	(46768	EV	16MR1938	C.C1470 )	(
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*Neidium* sp. #5.

543 NESPECCO TCT NO OF STATIONS 1

(46764	EV	17JL1937	C.CC806 )	(
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### Genus *Nitzschia* Hass.

Hassall, Hist. British Freshw. Alg., Vol. 1, p. 435. 1845.

The members of the genus *Nitzschia* occurring in Lake Michigan are found in a variety of habitats. Although the greatest number of species are found in benthic environments, a number of species are apparently euplanktonic. Besides the euplanktonic species, many of the entities that find their primary habitat in epipelagic communities are successful facultative planktonic and are regularly taken in plankton collections, usually in low numbers.

*Nitzschia acicularis* (Kütz.) Wm. Smith

*Synedra acicularis* Kützling, Bacill., p. 63, pl. 4, fig. 3. 1844.

*Nitzschia acicularis* (Kütz.) Wm. Smith, Syn. British Diat., Vol. 1, p. 39, pl. 13, fig. 108. 1853.

545 NIACICUL TCT NO OF STATIONS 25

(46906	CH	MY1947	C.00066 )	(46764	EV	17JL1937	0.02417 )	( 1231	E 3	16MY1964	C.CC489 )
( 1439	B 6	5JN1964	0.00799 )	( 1238	D 3	11JN1964	C.00400 )	( 1241	E 2	13JN1964	C.CC148 )
( 1243	E 6	13JN1964	0.00209 )	( 1246	F 3	11JN1964	C.CC598 )	( 1252	C* 1	16JL1964	C.CC279 )
( 1257	E 3	14JL1964	0.00479 )	( 1258	F 1	6JL1964	0.00944 )	( 1259	F 2	6JL1964	0.01544 )
( 1260	F 3	6JL1964	0.00191 )	( 1340	C 7	28MR1967	C.00073 )	( 1449	C 3	16JL1967	C.CC382 )
( 1450	C 5	16JL1967	0.00190 )	( 1546	LU 1	20C1967	0.00500 )	( 1551	ES 1	50C1967	C.CC799 )
( 1550	MR 1	50C1967	0.03717 )	( 1426	MS 2	29MY1967	C.01050 )	( 1350	BH 2	15AP1967	C.CC220 )
( 1401	MO 2	6MY1967	0.01176 )	( 1353	FR 2	23AP1967	C.01055 )	( 1354	GH 2	25AP1967	C.CC345 )
( 1345	CI 2	19AP1967	0.00359 )	(							

*Nitzschia acuta* Hantz.

*Nitzschia acuta* Hantzsch ex Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Förljld, 17(2):90. 1880.



## 546 NIACUTA TCT NO OF STATIONS 124

(46973	CH	1876	0.04724	( 3541	CH	1FE1881	C.00578	(46910	CH	OC1945	C.00109
(46921	CH	23NO1945	0.00388	(46917	CH	12JA1946	0.00111	(46915	CH	20FE1946	C.01138
(46914	CH	19AP1946	0.00747	(46524	CH	10MY1946	0.00282	(46923	CH	22NO1946	C.00219
(46920	CH	20DE1946	0.00031	(46505	CH	JA1947	0.00123	(46909	CH	MR1947	C.01366
(46916	CH	4MY1947	0.00407	(46506	CH	MY1947	C.00597	(46919	CH	5JN1947	C.01366
(46907	CH	JL1947	0.00937	(46522	CH	21AU1947	0.00145	(46758	EV	5JN1937	C.02853
(46771	EV	11JN1937	0.01864	(46743	EV	20JN1937	0.02997	(46770	EV	9JL1937	C.00596
(46757	EV	25JL1937	0.00481	(46747	EV	1AU1937	0.00248	(46756	EV	27AP1938	C.00336
(46755	EV	19MY1938	0.01013	(46761	EV	27MY1938	0.01363	( 1233	B 3	5JN2964	C.00238
( 1439	B 6	5JN1964	0.02198	( 1441	B 6	24JL1964	C.00441	( 1250	C 6	10JL1964	C.01233
( 1252	C* 1	16JL1964	0.00279	( 1255	D 5	15JL1964	C.00513	( 1256	E 2	14JL1964	C.02565
( 1257	E 3	14JL1964	0.00718	( 1258	F 1	6JL1964	C.01180	( 1259	F 2	6JL1964	C.00930
( 1260	F 3	6JL1964	0.01528	( 1271	C 7	22SE1964	C.00653	( 1284	E 6	17SF1964	C.02542
( 1285	F 1	15SE1964	0.01747	( 1286	F 2	15SE1964	C.01095	( 1290	C* 1	16OC1964	C.00379
( 1297	D 6	14OC1964	0.00190	( 1302	E 5	13OC1964	C.02429	( 1304	F 1	11OC1964	C.00988
( 1305	F 2	11OC1964	C.01035	( 1306	F 3	11OC1964	0.01940	( 1311	D 1	8NO1964	C.00258
( 1319	E 3	7NO1964	0.00524	( 1321	E 5	7NO1964	C.00638	( 1322	E 6	7NO1964	C.00200
( 1323	F 1	6NO1964	0.00279	( 1337	C 3	2MR1967	0.00147	( 1338	C 3	28MR1967	C.00529
( 1339	C 5	28MR1967	0.00624	( 1340	C 7	28MR1967	0.00436	( 1341	A 3	19AP1967	C.00542
( 1342	A 4	19AP1967	0.00361	( 1343	A 6	19AP1967	0.00208	( 1346	C 7	21AP1967	C.00935
( 1348	E 5	23AP1967	C.00960	( 1368	A 3	4MY1967	C.00314	( 1369	A 4	4MY1967	C.00373
( 1370	A 6	3MY1967	0.01151	( 1372	C 5	5MY1967	0.00355	( 1374	E 2	7MY1967	C.00299
( 1375	E 3	7MY1967	0.00241	( 1376	E 5	6MY1967	C.00281	( 1408	A 3	23MY1967	C.01342
( 1410	A 6	24MY1967	0.03383	( 1412	C 5	31MY1967	0.00421	( 1415	E 3	28MY1967	C.00225
( 1431	A 3	12JN1967	0.00257	( 1432	A 4	13JN1967	0.00766	( 1435	C 7	13JN1967	C.00631
( 1448	A 6	10JL1967	0.00354	( 1536	E 2	24SE1967	0.00273	( 1379	GS 3	9MY1967	C.00309
( 1381	GS 5	10MY1967	0.00477	( 1382	GS 6	10MY1967	0.00833	( 1383	GS 7	10MY1967	C.01604
( 1386	GS10	12MY1967	0.00287	( 1387	GS11	12MY1967	0.01584	( 1388	GS12	12MY1967	C.00603
( 1389	GS13	12MY1967	0.00516	( 1390	GS14	12MY1967	0.00587	( 1391	GS15	12MY1967	C.00479
( 1393	GS17	13MY1967	0.01096	( 1394	GS18	13MY1967	0.02580	( 1395	GS19	13MY1967	C.00705
( 1397	GS21	13MY1967	0.00327	( 1555	GS 2	30C1967	0.00353	( 1557	GS 4	30C1967	C.00747
( 1559	GS 7	40C1967	0.00350	( 1560	GS 8	40C1967	0.00472	( 1568	GS16	50C1967	C.00289
( 1569	GS17	50C1967	0.00149	( 1544	MU 1	22C1967	0.00477	( 1520	HQ 1	18SE1967	C.00471
( 1528	SB 1	20SE1967	0.01444	( 1551	ES 1	50C1967	0.01598	( 1552	SM 1	60C1967	C.00660
( 1550	MR 1	50C1967	C.18585	( 1553	SG 1	60C1967	0.00734	( 1426	MS 2	29MY1967	C.02100
( 1427	LU 2	29MY1967	0.01211	( 1417	HO 2	22MY1967	0.01495	( 1425	RA 2	25MY1967	C.01768
( 1399	PM 2	5MY1967	0.00680	( 1401	MQ 2	6MY1967	0.00588	( 1402	TR 2	6MY1967	C.00541
( 1400	SB 2	6MY1967	0.02383	( 1352	KW 2	21AP1967	0.02577	( 1429	WL 2	25MY1967	C.03185
( 1403	CA 2	10MY1967	0.17000	( 1404	MQ 2	10MY1967	0.01270	( 1405	ES 2	12MY1967	C.02580
( 1407	SM 2	14MY1967	0.00597	( 1349	CI 2	19AP1967	C.01078	( 1406	GB 2	13MY1967	0.01078
( 1421	CH 2	23MY1967	0.01735	( 1422	GA 2	23MY1967	C.04598	( 1423	WA 2	25MY1967	C.00428
( 1424	KN 2	25MY1967	0.01332	(							

*Nitzschia amphibia* Grun.

*Nitzschia amphibia* Grunow, Verh. Zool.-Bot. Ges. Wien, 12:574, pl. 18, fig. 23. 1862.

## 547 NIAMPHIB TCT NO OF STATIONS 52

(46910	CH	OC1945	0.00328	(46521	CH	23NO1945	C.00388	(46915	CH	20FE1946	C.02845
(46914	CH	19AP1946	0.00320	(46924	CH	10MY1946	0.00141	(46923	CH	22NO1946	C.01530
(46920	CH	20DE1946	0.00185	(46505	CH	JA1947	0.00123	(46909	CH	MR1947	C.00511
(46916	CH	4MY1947	0.00068	(46506	CH	MY1947	C.00066	(46919	CH	5JN1947	C.00455
(46907	CH	JL1947	0.00296	(46522	CH	21AU1947	C.01018	(46758	EV	5JN1937	C.02140
(46743	EV	20JN1937	0.00428	(46770	EV	9JL1937	C.00596	(46764	EV	17JL1937	C.12893
(46757	EV	25JL1937	0.18295	(46747	EV	1AU1937	0.05446	(46763	EV	23AU1937	C.40584
(46765	EV	30AU1937	0.02789	(46752	EV	15SE1937	C.13061	(46760	EV	22SE1937	C.00985
(46750	EV	24SE1937	0.00471	(46748	EV	13OC1937	0.10675	(46768	EV	16MR1938	C.17639
(46762	EV	18MR1938	0.15439	(46766	EV	14DE1938	C.03169	( 1243	E 6	13JN1964	C.00209
( 1252	C* 1	16JL1964	0.00279	( 1279	E 1	16SE1964	0.00393	( 1284	E 6	17SE1964	C.00318
( 1343	A 6	19AP1967	0.00069	( 1383	GS 7	10MY1967	C.00267	( 1557	GS 4	30C1967	C.00374
( 1559	GS 7	40C1967	0.00350	( 1566	GS14	50C1967	C.00183	( 1573	GS21	60C1967	C.00112
( 1546	LU 1	20C1967	0.00500	( 1522	BH 1	18SE1967	0.00365	( 1527	TR 1	20SE1967	C.01258
( 1545	WL 1	20C1967	0.00676	( 1549	MC 1	40C1967	0.01370	( 1550	MR 1	50C1967	C.11151
( 1553	SG 1	60C1967	0.01469	( 1428	MU 2	29MY1967	0.00301	( 1426	MS 2	25MY1967	C.01050
( 1417	HO 2	22MY1967	0.00374	( 1350	BH 2	19AP1967	C.07048	( 1407	SM 2	14MY1967	C.00597
( 1406	GB 2	13MY1967	0.00270	(							

*Nitzschia amphibia* var. *fossilis* Grun.

*Nitzschia amphibia* var. *fossilis* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Förljd, 17(2):98. 1880.

## 549 NIAMPHYQ TOT NO OF STATIONS 3

(46747	EV	1AU1937	C.00248	( 1574	GS22	60C1967	0.00288	( 1550	MR 1	50C1967	C.01239
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*Nitzschia angustata* (Wm. Smith) Grun.

*Tryblionella angustata* Wm. Smith, Syn. British Diat., Vol. 1, p. 36, suppl. pl. 30, fig. 262. 1853.

*Nitzschia angustata* (Wm. Smith) Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Förljd, 17(2):70. 1880.

## 550 NIANGUST TCT NO OF STATIONS 75

( 60973 )	CH	1876	0.11809 )	( 3540 )	CH	11MY1875	0.02796 )	( 3541 )	CH	1FE1881	0.28367 )
( 3507 )	CH	19FE1881	0.03396 )	( 46521 )	CH	23NO1945	0.02199 )	( 46917 )	CH	12JA1946	0.00471 )
( 46915 )	CH	20FE1946	0.01707 )	( 46514 )	CH	19AP1946	0.00747 )	( 46924 )	CH	10MY1946	0.00494 )
( 46923 )	CH	22NO1946	0.06338 )	( 46520 )	CH	20CE1946	0.01356 )	( 46905 )	CH	JA1947	0.00735 )
( 46909 )	CH	MR1947	0.01821 )	( 46516 )	CH	4MY1947	0.00170 )	( 46906 )	CH	MY1947	0.00996 )
( 46919 )	CH	5JN1947	0.02731 )	( 46507 )	CH	JL1947	0.01183 )	( 46922 )	CH	21AU1947	0.01648 )
( 46758 )	EV	5JN1937	0.00357 )	( 46743 )	EV	20JN1937	0.00856 )	( 46764 )	EV	17JL1937	0.03223 )
( 46757 )	EV	25JL1937	0.00963 )	( 46747 )	EV	1AU1937	0.00990 )	( 46763 )	EV	23AU1937	0.30438 )
( 46752 )	EV	15SE1937	0.08707 )	( 46760 )	EV	22SE1937	0.01477 )	( 46750 )	EV	24SE1937	0.04713 )
( 46744 )	EV	6OC1937	0.01463 )	( 46748 )	EV	13CC1937	0.04270 )	( 46767 )	EV	27OC1937	0.04255 )
( 46768 )	EV	16MR1938	0.02940 )	( 46762 )	EV	18MR1938	0.28672 )	( 46756 )	EV	27AP1938	0.00168 )
( 1228 )	D 2	14MY1964	0.00195 )	( 1258 )	F 1	6JL1964	0.00236 )	( 1259 )	F 2	6JL1964	0.00310 )
( 1264 )	C* 1	10AU1964	0.00193 )	( 1275 )	E 1	16SE1964	0.00393 )	( 1284 )	E 6	17SE1964	0.00318 )
( 1285 )	F 1	15SE1964	0.05241 )	( 1297 )	D 6	14CC1964	0.00190 )	( 1300 )	E 3	13OC1964	0.00358 )
( 1303 )	E 6	13CC1964	0.00560 )	( 1304 )	F 1	11OC1964	0.00494 )	( 1322 )	E 6	7NC1964	0.00333 )
( 1337 )	C 3	2MR1967	0.00147 )	( 1387 )	GS11	12MY1967	0.00396 )	( 1388 )	GS12	12MY1967	0.00603 )
( 1390 )	GS14	12MY1967	0.01174 )	( 1391 )	GS15	12MY1967	0.00479 )	( 1398 )	GS22	14MY1967	0.00304 )
( 1557 )	GS 4	30C1967	0.00374 )	( 1567 )	GS15	5CC1967	0.00159 )	( 1572 )	GS20	60C1967	0.00090 )
( 1574 )	GS22	6CC1967	0.00863 )	( 1526 )	MO 1	20SE1967	0.00569 )	( 1527 )	TR 1	20SE1967	0.00629 )
( 1529 )	KW 1	20SE1967	0.01199 )	( 1549 )	MO 1	40C1967	0.01370 )	( 1552 )	SW 1	60C1967	0.01981 )
( 1550 )	MR 1	50C1967	0.02478 )	( 1553 )	SG 1	6CC1967	0.01469 )	( 1426 )	PS 2	29MY1967	0.02100 )
( 1350 )	BH 2	19AP1967	0.00220 )	( 1401 )	MO 2	6MY1967	0.00588 )	( 1402 )	TR 2	6MY1967	0.00541 )
( 1400 )	SB 2	6MY1967	0.00596 )	( 1403 )	CA 2	10MY1967	0.06539 )	( 1404 )	MO 2	10MY1967	0.01270 )
( 1407 )	SM 2	14MY1967	0.01791 )	( 1349 )	CI 2	19AP1967	0.00359 )	( 1419 )	BU 2	23MY1967	0.01831 )
( 1421 )	CH 2	23MY1967	0.01735 )	( 1422 )	GA 2	23MY1967	0.00511 )	( 1423 )	WA 2	23MY1967	0.00428 )

*Nitzschia angustata* var. *acuta* Grun.

*Nitzschia angustata* var. *acuta* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):70. 1880.

## 551 NIANGUVA TCT NO OF STATIONS 5

( 46920 )	CH	20CE1946	0.00062 )	( 46919 )	CH	5JN1947	0.00303 )	( 1244 )	F 1	11JN1964	0.00219 )
( 1541 )	E 2	11OC1967	0.00532 )	( 1556 )	GS 3	30C1967	0.00521 )	(			

*Nitzschia apiculata* (Greg.) Grun.

*Tryblionella apiculata* Gregory, Trans. Micr. Soc. (London), n. s., 4:79, pl. 1, fig. 43. 1857.

*Nitzschia apiculata* (Greg.) Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):73. 1880.

## 552 NIAPICUL TCT NO OF STATIONS 1

( 1406 )	GB 2	13MY1967	0.00270 )	(			
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*Nitzschia bacata* Hust.

*Nitzschia bacata* Hustedt, Arch. Hydrobiol. Suppl., 15(3):485, pl. 41, figs. 30-33. 1938.

## 553 NIBACATA TCT NO OF STATIONS 188

( 60973 )	CH	1876	0.02362 )	( 46510 )	CH	0C1945	0.00218 )	( 46921 )	CH	23NO1945	0.00323 )
( 46917 )	CH	12JA1946	0.00166 )	( 46515 )	CH	20FE1946	0.01707 )	( 46914 )	CH	19AP1946	0.00641 )
( 46924 )	CH	10MY1946	0.00141 )	( 46520 )	CH	20CE1946	0.00031 )	( 46909 )	CH	MR1947	0.00911 )
( 46916 )	CH	4MY1947	0.00204 )	( 46506 )	CH	MY1947	0.11880 )	( 46919 )	CH	5JN1947	0.14112 )
( 46907 )	CH	JL1947	0.32052 )	( 46522 )	CH	21AU1947	0.00436 )	( 46758 )	EV	5JN1937	0.00357 )
( 46771 )	EV	11JN1937	0.02140 )	( 46743 )	EV	20JN1937	0.03426 )	( 46764 )	EV	17JL1937	0.00250 )
( 46757 )	EV	25JL1937	0.01926 )	( 46747 )	EV	1AU1937	0.01980 )	( 46763 )	EV	23AU1937	0.08117 )
( 46744 )	EV	6OC1937	0.01463 )	( 46748 )	EV	13OC1937	0.02135 )	( 46767 )	EV	27OC1937	0.00387 )
( 46745 )	EV	12MR1938	0.01214 )	( 46756 )	EV	27AP1938	0.00672 )	( 46759 )	EV	19MY1938	0.00338 )
( 46761 )	EV	27MY1938	0.00273 )	( 46766 )	EV	14DE1938	0.03169 )	( 1224 )	B 4	18MY1964	0.01961 )
( 1225 )	C 6	15MY1964	0.02352 )	( 1226 )	C 7	16MY1964	0.05327 )	( 1227 )	C* 2	13MY1964	0.00548 )
( 1228 )	D 2	14MY1964	0.14403 )	( 1229 )	D 5	14MY1964	0.11207 )	( 1230 )	E 2	16MY1964	0.41488 )
( 1231 )	E 3	16MY1964	0.34243 )	( 1232 )	E 5	16MY1964	0.73046 )	( 1233 )	B 3	5JN2964	0.01429 )
( 1234 )	B 3	18JN1964	0.00562 )	( 1235 )	C 7	16JN1964	0.00847 )	( 1439 )	B 6	5JN1964	0.12787 )
( 1236 )	C* 1	8JN1964	0.01050 )	( 1237 )	C* 2	8JN1964	0.06445 )	( 1238 )	D 3	11JN1964	0.38600 )
( 1239 )	D 4	11JN1964	0.00696 )	( 1240 )	D 6	10JN1964	0.04909 )	( 1241 )	E 2	13JN1964	0.06062 )
( 1242 )	E 3	13JN1964	0.01049 )	( 1243 )	E 6	13JN1964	0.15451 )	( 1244 )	F 1	11JN1964	0.00631 )
( 1245 )	F 2	11JN1964	0.12102 )	( 1246 )	F 3	11JN1964	0.12550 )	( 1248 )	B 3	24JL1964	0.00197 )
( 1440 )	B 6	11JL1964	0.01106 )	( 1441 )	B 6	24JL1964	0.00220 )	( 1250 )	C 6	10JL1964	0.01644 )
( 1252 )	C* 1	16JL1964	0.00279 )	( 1253 )	C* 2	16JL1964	0.00456 )	( 1254 )	D 2	15JL1964	0.00604 )
( 1255 )	D 5	15JL1964	0.02053 )	( 1256 )	E 2	14JL1964	0.19785 )	( 1257 )	E 3	14JL1964	0.24405 )
( 1258 )	F 1	6JL1964	0.15103 )	( 1259 )	F 2	6JL1964	0.02169 )	( 1260 )	F 3	6JL1964	0.00210 )
( 1261 )	B 3	2AU1964	0.00196 )	( 1265 )	C* 2	10AU1964	0.00224 )	( 1266 )	D 3	18AU1964	0.00351 )
( 1268 )	E 2	15AU1964	0.03009 )	( 1269 )	E 3	15AU1964	0.17267 )	( 1270 )	F 1	10AU1964	0.00272 )
( 1271 )	C 7	22SE1964	0.01306 )	( 1280 )	E 2	16SE1964	0.00681 )	( 1281 )	E 3	16SE1964	0.00785 )
( 1284 )	E 6	17SE1964	0.00318 )	( 1285 )	F 1	15SE1964	0.00582 )	( 1286 )	F 2	15SE1964	0.00289 )
( 1287 )	F 3	15SE1964	0.00500 )	( 1297 )	D 6	14OC1964	0.00190 )	( 1298 )	E 1	12OC1964	0.00269 )
( 1299 )	E 2	12OC1964	0.00628 )	( 1300 )	E 3	13OC1964	0.00358 )	( 1302 )	E 5	13OC1964	0.00810 )
( 1303 )	E 6	13OC1964	0.01679 )	( 1304 )	F 1	11OC1964	0.00494 )	( 1305 )	F 2	11OC1964	0.00173 )
( 1306 )	F 3	11OC1964	0.00832 )	( 1307 )	B 6	NO1964	0.00361 )	( 1308 )	C 7	6NO1964	0.00304 )

( 1313	D 3	9NO1964	0.00193 )	( 1318	E 2	7NO1964	0.00190 )	( 1319	E 3	7NO1964	C.CC524 )
( 1322	E 6	7NO1964	0.01666 )	( 1336	C 3	27JA1967	0.00385 )	( 1337	C 3	2MR1967	C.C03674 )
( 1338	C 3	28MR1967	0.03835 )	( 1339	C 5	28MR1967	C.13095 )	( 1340	C 7	28MR1967	C.C04581 )
( 1341	A 3	19AP1967	0.04882 )	( 1342	A 4	19AP1967	0.10647 )	( 1343	A 6	19AP1967	C.C0347 )
( 1344	C 3	25AP1967	0.01158 )	( 1345	C 5	25AP1967	0.24755 )	( 1346	C 7	21AP1967	C.C00534 )
( 1347	E 2	23AP1967	0.06178 )	( 1348	E 5	23AP1967	0.02467 )	( 1368	A 3	4MY1967	C.C2199 )
( 1370	A 6	3MY1967	0.00460 )	( 1372	C 5	5MY1967	C.01064 )	( 1374	E 2	7MY1967	C.C0C598 )
( 1375	E 3	7MY1967	0.00241 )	( 1376	E 5	6MY1967	0.00843 )	( 1408	A 3	23MY1967	C.CC447 )
( 1409	A 4	23MY1967	0.00298 )	( 1410	A 6	24MY1967	0.01128 )	( 1412	C 5	31MY1967	C.C01263 )
( 1415	E 3	28MY1967	0.00225 )	( 1416	E 5	28MY1967	0.00437 )	( 1432	A 4	13JN1967	C.C0C255 )
( 1434	C 5	17JN1967	0.00299 )	( 1435	C 7	13JN1967	0.00316 )	( 1438	E 5	14JN1967	C.C0C363 )
( 1447	A 4	11JL1967	0.00234 )	( 1449	C 3	16JL1967	0.01146 )	( 1450	C 5	16JL1967	C.CC571 )
( 1451	C 7	16JL1967	0.00591 )	( 1452	E 2	14JL1967	0.00213 )	( 1511	E 2	1SE1967	0.00307 )
( 1536	E 2	24SE1967	0.00273 )	( 1538	E 5	23SE1967	0.02210 )	( 1379	GS 3	9MY1967	C.CC309 )
( 1381	GS 5	10MY1967	0.01431 )	( 1383	GS 7	10MY1967	0.01337 )	( 1384	GS 8	10MY1967	C.C01109 )
( 1386	GS10	12MY1967	0.01149 )	( 1387	GS11	12MY1967	0.00792 )	( 1351	GS15	12MY1967	C.CC958 )
( 1393	GS17	13MY1967	0.00822 )	( 1394	GS18	13MY1967	0.05505 )	( 1395	GS19	13MY1967	C.C0117 )
( 1397	GS21	13MY1967	0.00131 )	( 1398	GS22	14MY1967	C.C0607 )	( 1555	GS 2	30C1967	C.C00353 )
( 1557	GS 4	30C1967	0.00374 )	( 1566	GS14	50C1967	0.00183 )	( 1569	GS17	50C1967	C.C0C149 )
( 1572	GS20	60C1967	0.00090 )	( 1544	MU 1	20C1967	0.00238 )	( 1346	LU 1	20C1967	C.C01000 )
( 1521	SH 1	18SE1967	0.01154 )	( 1522	BH 1	18SE1967	0.00182 )	( 1526	MC 1	20SE1967	0.14223 )
( 1527	TR 1	20SE1967	0.04403 )	( 1530	FR 1	24SE1967	C.C01000 )	( 1545	WL 1	20C1967	C.C02703 )
( 1549	MQ 1	40C1967	0.01370 )	( 1551	ES 1	50C1967	0.03195 )	( 1552	SM 1	60C1967	0.01981 )
( 1550	MR 1	30C1967	0.65667 )	( 1553	SG 1	60C1967	1.64512 )	( 1428	MU 2	29MY1967	C.C01808 )
( 1426	MS 2	29MY1967	0.13648 )	( 1351	MI 2	21AP1967	0.06206 )	( 1427	LU 2	29MY1967	C.C07264 )
( 1417	HQ 2	22MY1967	0.08599 )	( 1418	SH 2	22MY1967	0.01555 )	( 1350	BH 2	19AP1967	C.C03084 )
( 1399	PW 2	5MY1967	0.01360 )	( 1401	MO 2	6MY1967	0.03528 )	( 1402	TR 2	6MY1967	C.C02707 )
( 1400	SB 2	6MY1967	0.04765 )	( 1352	KW 2	21AP1967	0.04295 )	( 1353	FR 2	23AP1967	C.C0C055 )
( 1354	GH 2	25AP1967	0.17433 )	( 1429	WL 2	29MY1967	C.14864 )	( 1403	CA 2	10MY1967	C.C31385 )
( 1404	MQ 2	10MY1967	0.02541 )	( 1405	ES 2	12MY1967	0.01935 )	( 1407	SM 2	14MY1967	C.C02986 )
( 1349	CI 2	19AP1967	0.06466 )	( 1406	GB 2	13MY1967	C.C00539 )	( 1419	BU 2	23MY1967	0.03662 )
( 1420	IH 2	23MY1967	0.03021 )	( 1421	CH 2	23MY1967	0.05205 )	( 1422	GA 2	23MY1967	C.C03065 )
( 1423	WA 2	25MY1967	C.CC856 )	( 1424	KN 2	25MY1967	0.05329 )	(			

*Nitzschia bulnheimiana* (Rabh.) H. L. Smith

*Homoeocladia bulnheimiana* Rabenhorst, Alg. Sachsens resp. Mitteleuropas,  
No. 1301. 1871.

*Nitzschia bulnheimiana* (Rabh.) H. L. Smith, Diat. Sp. Typ., No. 689. 1874.

554 NIBULNHC TOT NO OF STATIONS 5

(46764	EV	17JL1937	0.05641 )	(46767	EV	27OC1937	0.00774 )	( 1536	E 2	24SE1967	C.CC273 )
( 1551	ES 1	50C1967	0.00799 )	( 1550	MR 1	50C1967	0.01239 )	(			

*Nitzschia capitellata* Hust.

*Nitzschia capitellata* Hustedt in: A. Schmidt, Atlas Diat., pl. 349,  
figs. 57-59. 1922.

555 NICAPITE ICT NO OF STATIONS 3

( 1531	GH 1	25SE1967	0.03381 )	( 1545	WL 1	20C1967	0.01351 )	( 1417	HC 2	22MY1967	C.CC374 )
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*Nitzschia confinis* Hust.

*Nitzschia confinis* Hustedt, Inst. Parcs Nat. Congo Belge, Expl. Parc. Nat.  
Albert, Miss. Damas (1935-1936), Fasc. 8, p. 145, pl. 11, figs. 49-54;  
pl. 13, figs. 84-90. 1949.

556 NICONFIN TOT NO OF STATIONS 99

(46910	CH	OC1945	0.00109 )	(46921	CH	23NO1945	0.03816 )	(46908	CH	DE1945	0.02014 )
(46917	CH	12JA1946	0.00166 )	(46915	CH	20FE1946	0.07398 )	(46914	CH	19AP1946	0.00854 )
(46924	CH	10MY1946	0.00494 )	(46923	CH	22NO1946	0.10928 )	(46909	CH	MR1947	C.C6375 )
(46916	CH	4MY1947	0.00407 )	(46906	CH	MY1947	0.00796 )	(46919	CH	5JN1947	C.88770 )
(46907	CH	JL1947	0.00690 )	(46913	CH	6AU1947	0.01046 )	(46922	CH	21AU1947	C.10468 )
(46758	EV	5JN1937	0.06415 )	(46743	EV	20JN1937	0.04710 )	(46745	EV	3JL1937	C.02090 )
(46770	EV	9JL1937	0.01193 )	(46764	EV	17JL1937	0.49960 )	(46757	EV	25JL1937	C.C03370 )
(46747	EV	1AU1937	0.05446 )	(46763	EV	23AU1937	0.24351 )	(46765	EV	30AU1937	C.C01115 )
(46752	EV	15SE1937	0.39182 )	(46760	EV	22SE1937	0.02462 )	(46750	EV	24SE1937	C.41476 )
(46744	EV	60C1937	0.01951 )	(46748	EV	13OC1937	0.10675 )	(46767	EV	27OC1937	C.C03095 )
(46749	EV	12MR1938	0.01214 )	(46768	EV	16MR1938	0.01470 )	(46762	EV	18MR1938	C.C04411 )
(46751	EV	30MR1938	0.01117 )	(46759	EV	19MY1938	0.00675 )	(46766	EV	14DE1938	C.C01109 )
( 1229	D 5	14MY1964	0.00211 )	( 1243	E 6	13JN1964	0.00209 )	( 1252	C' 1	16JL1964	C.C01116 )
( 1255	D 5	15JL1964	0.00513 )	( 1256	E 2	14JL1964	0.00183 )	( 1257	E 3	14JL1964	C.C0718 )
( 1258	F 1	6JL1964	0.03304 )	( 1259	F 2	6JL1964	0.00310 )	( 1260	F 3	6JL1964	C.CC382 )
( 1266	D 3	18AU1964	0.00351 )	( 1268	E 2	15AU1964	C.01368 )	( 1271	C 7	22SE1964	C.CC653 )
( 1275	D 2	17SE1964	0.00645 )	( 1279	E 1	16SE1964	C.00393 )	( 1284	E 6	17SE1964	C.C0318 )
( 1285	F 1	15SE1964	0.02330 )	( 1288	B 3	15OC1964	0.00218 )	( 1445	B 6	14OC1964	C.C0652 )
( 1297	D 6	14CC1964	0.00190 )	( 1303	E 6	13CC1964	0.00560 )	( 1304	F 1	11OC1964	C.CC247 )
( 1307	B 6	NO1964	0.00361 )	( 1340	C 7	28MR1967	0.00145 )	( 1341	A 3	19AP1967	0.00108 )
( 1342	A 4	19AP1967	0.00361 )	( 1343	A 6	19AP1967	C.C0069 )	( 1345	C 5	25AP1967	C.CC195 )
( 1348	E 5	23AP1967	0.00137 )	( 1373	C 7	5MY1967	0.00285 )	( 1374	E 2	7MY1967	C.C00299 )
( 1449	C 3	16JL1967	0.00764 )	( 1450	C 5	16JL1967	C.C00381 )	( 1453	E 3	15JL1967	C.CC253 )
( 1454	E 5	15JL1967	0.00200 )	( 1536	E 2	24SE1967	0.00545 )	( 1383	GS 7	10MY1967	C.C0267 )
( 1384	GS 8	10MY1967	0.00370 )	( 1387	GS11	12MY1967	C.C0396 )	( 1391	GS15	12MY1967	C.C0479 )
( 1394	GS18	13MY1967	0.00688 )	( 1554	GS 1	30C1967	0.00712 )	( 1557	GS 4	30C1967	C.C01495 )
( 1560	GS 8	40C1967	0.00472 )	( 1562	GS10	50C1967	C.C0247 )	( 1563	GS11	50C1967	C.CC234 )

( 1566	GS14	50C1967	0.00183 )	( 1569	GS17	50C1967	0.00149 )	( 1571	GS19	60C1967	C.00059 )
( 1573	GS21	60C1967	0.00112 )	( 1574	GS22	60C1967	0.00288 )	( 1526	MO 1	20SE1967	C.C1138 )
( 1529	KW 1	20SE1967	0.01199 )	( 1545	WL 1	20C1967	0.00676 )	( 1551	ES 1	50C1967	C.C2396 )
( 1550	MR 1	50C1967	0.09912 )	( 1351	MI 2	21AP1967	C.00310 )	( 1417	MO 2	22MY1967	C.CC374 )
( 1352	KW 2	21AP1967	0.00859 )	( 1403	CA 2	10MY1967	C.09154 )	( 1404	MQ 2	10MY1967	C.C127C )
( 1405	ES 2	12MY1967	0.01935 )	( 1349	CI 2	19AP1967	C.00359 )	( 1422	GA 2	23MY1967	C.00511 )

*Nitzschia denticula* Grun.

*Nitzschia denticula* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad.  
Handl., Ny Följd, 17(2):82. 1880.

558 NIDENIIC TCT NO OF STATIONS 44

(46921	CH	23NO1945	C.00129 )	(46517	CH	12JA1946	C.00028 )	(46924	CH	10MY1946	C.CC141 )
(46923	CH	22NO1946	0.00219 )	(46920	CH	20DE1946	C.00062 )	(46905	CH	JA1947	C.00245 )
(46916	CH	4MY1947	0.00034 )	(46506	CH	MY1947	0.00133 )	(46919	CH	5JN1947	C.CC152 )
(46907	CH	JL1947	0.00148 )	(46922	CH	21AU1947	0.00097 )	(46758	EV	5JN1937	C.00713 )
(46743	EV	20JN1937	0.00856 )	(46764	EV	17JL1937	C.06446 )	(46757	EV	25JL1937	C.C4814 )
(46747	EV	1AU1937	0.03713 )	(46763	EV	23AU1937	0.08117 )	(46765	EV	30AU1937	C.01115 )
(46748	EV	13OC1937	0.04270 )	(46767	EV	27CC1937	C.00774 )	(46768	EV	16MR1938	C.C5880 )
(46762	EV	18MR1938	0.08822 )	( 1243	E 6	13JN1964	C.00209 )	( 1246	F 3	11JN1964	C.00598 )
( 1258	F 1	6JL1964	0.00708 )	( 1260	F 3	6JL1964	C.00191 )	( 1270	F 1	10AU1964	C.C1089 )
( 1279	E 1	16SE1964	0.00393 )	( 1285	F 1	15SE1964	C.40766 )	( 1304	F 1	11OC1964	C.00247 )
( 1306	F 3	11OC1964	0.00832 )	( 1320	E 4	7NO1964	C.00207 )	( 1388	GS12	12MY1967	C.01207 )
( 1389	GS13	12MY1967	0.00258 )	( 1398	GS22	14MY1967	0.00304 )	( 1557	GS 4	30C1967	C.00374 )
( 1558	GS 5	40C1967	0.00396 )	( 1564	GS12	50C1967	C.00165 )	( 1574	GS22	60C1967	C.02013 )
( 1526	MO 1	20SE1967	0.00569 )	( 1527	TR 1	20SE1967	0.00629 )	( 1529	KW 1	20SE1967	C.01199 )
( 1404	MQ 2	10MY1967	0.01270 )	( 1407	SM 2	14MY1967	C.00597 )				

*Nitzschia dissipata* (Kütz.) Grun.

*Synedra dissipata* Kützing, Bacill., p. 64, pl. 14, fig. 3. 1844.  
*Nitzschia dissipata* (Kütz.) Grunow, Verh. Zool.-Bot. Ges. Wien, 12(2):17.  
1862.

559 NIDISSIP TCT NO OF STATIONS 178

(46921	CH	23NO1945	0.00129 )	(46514	CH	19AP1946	C.00107 )	(46924	CH	10MY1946	C.CC141 )
(46923	CH	22NO1946	0.00656 )	(46505	CH	JA1947	C.00245 )	(46909	CH	MR1947	C.00911 )
(46916	CH	4MY1947	0.00034 )	(46506	CH	MY1947	C.00265 )	(46919	CH	5JN1947	C.34446 )
(46922	CH	21AU1947	0.00048 )	(46758	EV	5JN1937	0.04279 )	(46743	EV	20JN1937	C.CC428 )
(46764	EV	17JL1937	0.24174 )	(46757	EV	25JL1937	0.04333 )	(46747	EV	1AU1937	C.C1238 )
(46763	EV	23AU1937	0.77110 )	(46752	EV	15SE1937	0.08707 )	(46767	EV	27OC1937	C.00387 )
(46762	EV	18MR1938	0.02206 )	(46756	EV	27AP1938	0.00168 )	(46759	EV	19MY1938	C.00338 )
(46761	EV	27MY1938	0.00273 )	( 1223	B 3	18MY1964	0.00156 )	( 1224	B 4	18MY1964	C.C1176 )
( 1225	C 6	15MY1964	0.00784 )	( 1226	C 7	16MY1964	0.00761 )	( 1227	C* 2	13MY1964	C.00768 )
( 1228	D 2	14MY1964	0.02141 )	( 1229	D 5	14MY1964	C.01903 )	( 1230	E 2	16MY1964	C.C7408 )
( 1231	F 3	16MY1964	0.14431 )	( 1232	E 5	16MY1964	C.12696 )	( 1235	C 7	16JN1964	C.00282 )
( 1439	B 6	5JN1964	0.03397 )	( 1236	C* 1	8JN1964	0.00175 )	( 1238	D 3	11JN1964	C.01800 )
( 1239	D 4	11JN1964	0.00116 )	( 1240	D 6	10JN1964	0.00767 )	( 1241	E 2	13JN1964	C.C1626 )
( 1242	E 3	13JN1964	0.05395 )	( 1243	E 6	13JN1964	0.00209 )	( 1244	F 1	11JN1964	0.00658 )
( 1245	F 2	11JN1964	0.00692 )	( 1246	F 3	11JN1964	0.01793 )	( 1440	B 6	11JL1964	C.CC365 )
( 1441	B 6	24JL1964	0.00220 )	( 1251	C 7	16JL1964	0.00290 )	( 1255	D 5	15JL1964	C.00257 )
( 1256	E 2	14JL1964	0.02381 )	( 1257	E 3	14JL1964	0.11724 )	( 1258	F 1	6JL1964	C.CC708 )
( 1259	F 2	6JL1964	0.00310 )	( 1260	F 3	6JL1964	0.00764 )	( 1262	B 3	17AU1964	C.CC210 )
( 1264	C* 1	10AU1964	0.00386 )	( 1268	E 2	15AU1964	C.00821 )	( 1269	E 3	15AU1964	C.01096 )
( 1270	F 1	10AU1964	0.00272 )	( 1280	E 2	16SE1964	0.00681 )	( 1285	F 1	15SE1964	C.08153 )
( 1288	B 3	15OC1964	0.00218 )	( 1445	B 6	14OC1964	0.00326 )	( 1292	D 1	15OC1964	C.00373 )
( 1300	E 3	13OC1964	0.02506 )	( 1301	E 4	13OC1964	0.00442 )	( 1302	E 5	13OC1964	C.00810 )
( 1304	F 1	11OC1964	0.00741 )	( 1365	F 2	11OC1964	C.00518 )	( 1306	F 3	11OC1964	C.CC277 )
( 1315	D 5	9NO1964	0.00910 )	( 1317	E 1	6NO1964	0.00383 )	( 1318	E 2	7NO1964	C.00761 )
( 1320	E 4	7NO1964	0.00207 )	( 1322	E 6	7NO1964	0.00333 )	( 1323	F 1	6NO1964	C.00418 )
( 1336	C 3	27JA1967	0.00193 )	( 1337	C 3	2MR1967	0.02058 )	( 1338	C 3	28MR1967	C.16793 )
( 1339	C 5	28MR1967	0.05612 )	( 1340	C 7	28MR1967	0.06835 )	( 1341	A 3	19AP1967	C.12909 )
( 1342	A 4	19AP1967	0.21475 )	( 1343	A 6	19AP1967	C.02918 )	( 1344	C 3	25AP1967	C.C1324 )
( 1345	C 5	25AP1967	0.81867 )	( 1346	C 7	21AP1967	0.07344 )	( 1347	E 2	23AP1967	C.C5553 )
( 1348	E 5	23AP1967	0.35093 )	( 1368	A 3	4MY1967	0.02513 )	( 1369	A 4	4MY1967	C.01118 )
( 1370	A 6	3MY1967	0.01151 )	( 1372	C 5	5MY1967	0.04965 )	( 1373	C 7	5MY1967	C.01141 )
( 1374	E 2	7MY1967	0.01494 )	( 1375	E 3	7MY1967	0.00481 )	( 1376	E 5	6MY1967	C.04779 )
( 1408	A 3	23MY1967	0.00894 )	( 1410	A 6	24MY1967	0.00564 )	( 1411	C 3	31MY1967	C.00410 )
( 1412	C 5	31MY1967	0.02525 )	( 1416	E 5	28MY1967	C.00656 )	( 1422	A 4	13JN1967	C.CC511 )
( 1433	C 3	17JN1967	0.01292 )	( 1434	C 5	17JN1967	0.00299 )	( 1438	E 5	14JN1967	C.CC363 )
( 1446	A 3	11JL1967	0.00245 )	( 1449	C 2	16JL1967	0.13757 )	( 1450	C 5	16JL1967	C.02237 )
( 1452	E 2	14JL1967	0.00213 )	( 1453	E 3	15JL1967	0.07330 )	( 1454	E 5	15JL1967	C.CC200 )
( 1509	C 5	25SE1967	0.00505 )	( 1512	E 3	1SE1967	0.00393 )	( 1532	A 3	18SE1967	C.CC329 )
( 1533	A 4	19SE1967	0.00464 )	( 1539	C 3	40C1967	C.01510 )	( 1540	C 5	40C1967	C.CC496 )
( 1541	E 2	11OC1967	C.01064 )	( 1378	GS 2	9MY1967	0.00421 )	( 1379	GS 3	9MY1967	C.CC619 )
( 1380	GS 4	9MY1967	0.01345 )	( 1381	GS 5	10MY1967	C.01193 )	( 1382	GS 6	10MY1967	C.CC278 )
( 1383	GS 7	10MY1967	C.02139 )	( 1384	GS 8	10MY1967	0.02588 )	( 1386	GS10	12MY1967	C.CC258 )
( 1387	GS11	12MY1967	0.01584 )	( 1391	GS15	12MY1967	0.01437 )	( 1392	GS16	12MY1967	C.CC308 )
( 1393	GS17	13MY1967	0.01096 )	( 1394	GS18	13MY1967	0.16170 )	( 1395	GS19	13MY1967	C.CC822 )
( 1397	GS21	13MY1967	C.00065 )	( 1555	GS 2	30C1967	0.00706 )	( 1556	GS 3	30C1967	C.CC521 )
( 1557	GS 4	30C1967	0.01868 )	( 1558	GS 5	40C1967	0.03567 )	( 1559	GS 7	40C1967	C.CC350 )
( 1560	GS 8	40C1967	0.00472 )	( 1562	GS10	50C1967	0.00247 )	( 1565	GS13	50C1967	C.CC507 )
( 1568	GS16	50C1967	0.00289 )	( 1570	GS18	50C1967	0.00992 )	( 1573	GS21	60C1967	C.CC112 )
( 1544	MU 1	20C1967	0.01430 )	( 1524	MI 1	20SE1967	C.02189 )	( 1546	LU 1	20C1967	C.28510 )
( 1521	SH 1	18SE1967	0.02885 )	( 1522	BH 1	18SE1967	0.00547 )	( 1525	PM 1	20SE1967	C.01393 )
( 1526	MO 1	20SE1967	0.01138 )	( 1527	TR 1	20SE1967	0.04403 )	( 1528	SB 1	20SE1967	C.CC2888 )
( 1529	KW 1	20SE1967	0.02398 )	( 1530	FR 1	24SE1967	C.03000 )	( 1545	WL 1	20C1967	C.15362 )
( 1551	ES 1	50C1967	0.02396 )	( 1550	MR 1	50C1967	C.26019 )	( 1553	SG 1	60C1967	C.CC734 )

( 1428	MU 2	29MY1967	0.01808 )	( 1426	MS 2	29MY1967	0.29396 )	( 1351	PI 2	21AP1967	0.01241 )
( 1427	LU 2	25MY1967	0.06053 )	( 1417	HO 2	22MY1967	0.03365 )	( 1350	BH 2	19AP1967	0.03744 )
( 1399	PW 2	5MY1967	0.01360 )	( 1400	SB 2	6MY1967	0.02978 )	( 1352	KW 2	21AP1967	0.00859 )
( 1354	GH 2	25AP1967	0.00173 )	( 1429	WL 2	29MY1967	0.02123 )	( 1403	CA 2	10MY1967	0.14385 )
( 1404	MQ 2	10MY1967	0.02541 )	( 1405	ES 2	12MY1967	0.01290 )	( 1349	CI 2	19AP1967	0.00718 )
( 1406	GB 2	13MY1967	0.00270 )	( 1419	BU 2	23MY1967	0.01831 )	( 1423	WA 2	25MY1967	0.02997 )
( 1424	KN 2	25MY1967	0.01332 )	(							

*Nitzschia dissipata* var. *media* (Hantz.) Grun.

*Nitzschia media* Hantzsch, Hedwigia, 2:40, pl. 6, fig. 9. 1853.

*Nitzschia dissipata* var. *media* Grunow in: Van Heurck, Syn. Diat. Belgique, p. 178, pl. 63, fig. 4. 1885.

560 NIDISSVM TCT NO OF STATIONS 40

(46770	EV	9JL1937	0.01193 )	(46768	EV	16MR1938	0.11760 )	( 1389	GS13	12MY1967	0.00258 )
( 1555	GS 2	30C1967	0.00353 )	( 1557	GS 4	30C1967	0.00374 )	( 1560	GS 8	40C1967	0.00472 )
( 1565	GS13	50C1967	0.01014 )	( 1544	MU 1	20C1967	0.00238 )	( 1547	MS 1	20C1967	0.01597 )
( 1524	MI 1	20SE1967	0.04378 )	( 1546	LU 1	20C1967	0.02001 )	( 1521	SH 1	18SE1967	0.02885 )
( 1522	BH 1	18SE1967	0.00182 )	( 1523	RA 1	19SE1967	0.04613 )	( 1526	MO 1	20SE1967	0.03982 )
( 1527	TR 1	20SE1967	0.06289 )	( 1529	KW 1	20SE1967	0.07195 )	( 1530	FR 1	24SE1967	0.01000 )
( 1531	GH 1	25SE1967	0.00845 )	( 1545	WL 1	20C1967	0.03379 )	( 1548	CA 1	30C1967	0.01272 )
( 1551	ES 1	50C1967	0.00799 )	( 1552	SM 1	60C1967	0.01321 )	( 1550	MR 1	50C1967	0.08673 )
( 1553	SG 1	60C1967	0.00734 )	( 1428	MU 2	29MY1967	0.00603 )	( 1426	MS 2	29MY1967	0.03150 )
( 1351	MI 2	21AP1967	0.00621 )	( 1427	LU 2	29MY1967	0.01211 )	( 1417	HO 2	22MY1967	0.00748 )
( 1418	SH 2	22MY1967	0.03110 )	( 1350	BH 2	19AP1967	0.06388 )	( 1401	MO 2	6MY1967	0.01764 )
( 1402	TR 2	6MY1967	0.00541 )	( 1354	GH 2	25AP1967	0.01036 )	( 1403	CA 2	10MY1967	0.01308 )
( 1407	SM 2	14MY1967	0.01194 )	( 1349	CI 2	19AP1967	0.00359 )	( 1406	GB 2	13MY1967	0.00270 )
( 1423	WA 2	25MY1967	0.00428 )	(							

*Nitzschia filiformis* (Wm. Smith) Schutt

*Homoeocladia filiformis* Wm. Smith, Syn. British Diat., Vol. 2, p. 80, pl. 55. fig. 348. 1856.

*Nitzschia filiformis* (Wm. Smith) Schutt in: Engler and Prantl, Natürl. Pflanzenfam., Teil 1, Abt. 1b, p. 144, figs. 261a-c. 1896.

561 NIFILIFC TCT NO OF STATIONS 1

(46905	CH	MR1947	0.00455 )	(			
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*Nitzschia fonticola* Grun.

*Nitzschia fonticola* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 69, figs. 15-20. 1881.

562 NIFONTIC TCT NO OF STATIONS 104

(46910	CH	OC1945	0.00328 )	(46521	CH	23NO1945	0.00259 )	(46915	CH	20FE1946	0.01707 )
(46914	CH	19AP1946	0.00107 )	(46924	CH	10MY1946	0.00071 )	(46923	CH	22NO1946	0.01748 )
(46905	CH	JA1947	0.00245 )	(46509	CH	MR1947	0.00455 )	(46916	CH	4MY1947	0.00102 )
(46906	CH	MY1947	0.00199 )	(46919	CH	5JN1947	0.01973 )	(46907	CH	JL1947	0.00148 )
(46922	CH	21AU1947	0.00291 )	(46758	EV	5JN1937	0.08915 )	(46743	EV	20JN1937	0.01713 )
(46770	EV	9JL1937	0.01789 )	(46764	EV	17JL1937	0.75745 )	(46757	EV	25JL1937	0.26961 )
(46747	EV	1AU1937	0.13862 )	(46763	EV	23AU1937	1.56250 )	(46765	EV	30AU1937	0.00558 )
(46752	EV	15SE1937	2.04615 )	(46760	EV	22SE1937	0.02462 )	(46750	EV	24SE1937	0.08012 )
(46744	EV	60C1937	0.03414 )	(46748	EV	13CC1937	0.08540 )	(46767	EV	27OC1937	0.71951 )
(46749	EV	12MR1938	0.03641 )	(46768	EV	16MR1938	0.13229 )	(46762	EV	18MR1938	1.45978 )
(46751	EV	30MR1938	0.03350 )	(46756	EV	27AP1938	0.00336 )	(46759	EV	19MY1938	0.00338 )
(46761	EV	27MY1938	0.00545 )	(46766	EV	14DE1938	0.19011 )	( 1439	B 6	5JN1964	0.00200 )
( 1236	C* 1	8JN1964	0.00175 )	( 1237	C* 2	8JN1964	0.00258 )	( 1240	D 6	10JN1964	0.00153 )
( 1241	E 2	13JN1964	0.00444 )	( 1242	E 3	13JN1964	0.00300 )	( 1243	E 6	13JN1964	0.00209 )
( 1245	F 2	11JN1964	0.00346 )	( 1251	C 7	16JL1964	0.00290 )	( 1256	E 2	14JL1964	0.00366 )
( 1264	C* 1	10AU1964	0.01545 )	( 1265	C* 2	10AU1964	0.00447 )	( 1268	E 2	15AU1964	0.00547 )
( 1269	E 3	15AU1964	0.00274 )	( 1272	C* 1	10SE1964	0.00410 )	( 1285	F 1	15SE1964	0.00582 )
( 1288	B 3	15OC1964	0.00435 )	( 1295	D 4	15OC1964	0.00595 )	( 1298	E 1	12OC1964	0.00539 )
( 1299	E 2	12OC1964	0.00943 )	( 1300	E 3	13OC1964	0.00716 )	( 1301	E 4	13OC1964	0.00442 )
( 1302	E 5	13OC1964	0.00405 )	( 1312	D 2	8NO1964	0.00310 )	( 1315	D 5	9NO1964	0.00455 )
( 1318	E 2	7NO1964	0.00190 )	( 1320	E 4	7NO1964	0.00620 )	( 1346	C 7	21AP1967	0.00134 )
( 1416	E 5	28MY1967	0.00219 )	( 1452	E 2	14JL1967	0.00213 )	( 1511	E 2	1SE1967	0.00307 )
( 1539	C 3	40C1967	0.00503 )	( 1541	E 2	11OC1967	0.00532 )	( 1542	E 3	11OC1967	0.00509 )
( 1543	E 5	10OC1967	0.01437 )	( 1383	GS 7	10MY1967	0.00267 )	( 1387	GS11	12MY1967	0.00792 )
( 1389	GS13	12MY1967	0.00258 )	( 1554	GS 1	30C1967	0.01423 )	( 1555	GS 2	30C1967	0.00353 )
( 1558	GS 5	40C1967	0.00396 )	( 1559	GS 7	40C1967	0.00350 )	( 1560	GS 8	40C1967	0.00465 )
( 1563	GS11	50C1967	0.00234 )	( 1565	GS13	50C1967	0.01521 )	( 1571	CS19	60C1967	0.00059 )
( 1572	GS20	60C1967	0.00180 )	( 1574	GS22	60C1967	0.00575 )	( 1544	MU 1	20C1967	0.02859 )
( 1547	MS 1	20C1967	0.01597 )	( 1546	LU 1	20C1967	0.31511 )	( 1526	MO 1	20SE1967	0.01707 )
( 1527	TR 1	20SE1967	0.01887 )	( 1529	KW 1	20SE1967	0.03598 )	( 1530	FR 1	24SE1967	0.01001 )
( 1545	WL 1	20C1967	1.18927 )	( 1549	MC 1	40C1967	0.02741 )	( 1551	ES 1	50C1967	0.00799 )
( 1552	SM 1	60C1967	0.01321 )	( 1550	MR 1	50C1967	0.09912 )	( 1553	SG 1	60C1967	0.00465 )
( 1350	BH 2	19AP1967	0.03304 )	( 1401	MO 2	6MY1967	0.00588 )	( 1402	TR 2	6MY1967	0.00541 )
( 1354	GH 2	25AP1967	0.00345 )	( 1429	WL 2	29MY1967	0.05308 )	( 1403	CA 2	10MY1967	0.02615 )
( 1404	MQ 2	10MY1967	0.01270 )	( 1407	SM 2	14MY1967	0.01194 )	(			

*Nitzschia fonticola* var. *pelagica* Hust.

*Nitzschia fonticola* var. *pelagica* Hustedt in: A. Schmidt, Atlas Diat., pl. 349, figs. 15-16. 1922.

563 NIFONTVP TCT NO OF STATIONS 6

( 1316 )	0 6	9NO1964	0.00378 )	( 1544 )	MU 1	20C1967	0.00238 )	( 1550 )	MR 1	50C1967	C.07434 )
( 1350 )	BH 2	19AP1967	0.01101 )	( 1400 )	SB 2	6MY1967	0.00596 )	( 1407 )	SM 2	14MY1967	C.01194 )

*Nitzschia fonticoloides* Sov.

*Nitzschia fonticoloides* Sovereign, Trans. American Micr. Soc., 77(2):130, pl. 4, figs. 58-62. 1958.

564 NIFONLEC TCT NO OF STATIONS 8

( 46757 )	EV	25JL1937	0.00481 )	( 1387 )	GS11	12MY1967	0.00396 )	( 1575 )	GS28	60C1967	C.00258 )
( 1544 )	MU 1	20C1967	0.00477 )	( 1545 )	WL 1	20C1967	0.00676 )	( 1550 )	MR 1	50C1967	C.003717 )
( 1400 )	SB 2	6MY1967	0.00596 )	( 1403 )	CA 2	10MY1967	0.05231 )	( )			

*Nitzschia frustulum* (Kütz.) Grun.

*Synedra frustulum* Kützing, Bacill., p. 63, pl. 30, fig. 77. 1844.

*Nitzschia frustulum* (Kütz.) Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):98. 1880.

565 NIFRUSTQ TCT NO OF STATIONS 4

( 1573 )	GS21	60C1967	0.00112 )	( 1574 )	GS22	60C1967	0.00288 )	( 1417 )	HO 2	22MY1967	C.00374 )
( 1401 )	MO 2	6MY1967	0.00588 )	( )							

*Nitzschia frustulum* var. *perminuta* Grun.

*Nitzschia frustulum* var. *perminuta* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 68, fig. 31. 1881.

566 NIFRUSVP TCT NO OF STATIONS 7

( 1565 )	GS13	50C1967	0.01014 )	( 1567 )	GS15	50C1967	0.00159 )	( 1568 )	GS16	50C1967	C.00144 )
( 1523 )	RA 1	19SE1967	0.00923 )	( 1553 )	SG 1	60C1967	0.01469 )	( 1417 )	HO 2	22MY1967	C.00748 )
( 1350 )	BH 2	19AP1967	0.03524 )	( )							

*Nitzschia hungarica* Grun.

*Nitzschia hungarica* Grunow, Verh. Zool.-Bot. Ges. Wien, 12:568, pl. 18, figs. 31a-b. 1862.

568 NIHUNGAR TCT NO OF STATIONS 9

( 1264 )	C 1	10AU1964	0.00193 )	( 1504 )	A 3	28AU1967	0.00247 )	( 1556 )	GS 3	30C1967	C.00521 )
( 1567 )	GS15	50C1967	0.00159 )	( 1417 )	HO 2	22MY1967	0.00374 )	( 1350 )	BH 2	19AP1967	C.00220 )
( 1401 )	MO 2	6MY1967	0.01764 )	( 1400 )	SB 2	6MY1967	0.00596 )	( 1422 )	CA 2	23MY1967	C.00511 )

*Nitzschia insecta* Hust.

*Nitzschia insecta* Hustedt, Internat. Rev. Hydrobiol., 42:141, fig. 348. 1942.

569 NIINSECQ TCT NO OF STATIONS 2

( 46924 )	CH	10MY1946	0.00071 )	( 1572 )	GS20	60C1967	0.00090 )	( )			
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*Nitzschia interrupta* (Reich.) Hust.

*Denticula interrupta* Reichelt ex Kuntze, Rev. Gen. Plant., 3:392. 1891.

*Nitzschia interrupta* (Reich.) Hustedt, Arch. Hydrobiol., 18:168. 1927.

570 NIINTERR TCT NO OF STATIONS 1

( 46763 )	EV	23AU1937	0.02025 )	( )							
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*Nitzschia luzonensis* Hust.

*Nitzschia luzonensis* Hustedt, Internat. Rev. Hydrobiol., 42:137, figs. 331-336. 1942.

571 NILUZONE TGT NO OF STATIONS 29

(46910	CH	0C1945	0.00109 )	(46921	CH	23NO1945	C.00065 )	(46917	CH	12JA1946	C.00028 )
(46915	CH	20FE1946	0.00569 )	(46914	CH	19AP1946	0.00107 )	(46916	CH	4MY1947	C.00068 )
(46919	CH	5JN1947	0.00759 )	(46758	EV	5JN1937	0.00357 )	(46770	EV	9JL1937	C.00596 )
(46764	EV	17JL1937	0.07252 )	(46757	EV	25JL1937	0.00963 )	(46767	EV	27OC1937	C.00387 )
(46766	EV	14DE1938	0.01584 )	( 1440	B 6	11JL1964	0.00369 )	( 1256	E 2	14JL1964	0.00183 )
( 1257	E 3	14JL1964	0.00239 )	( 1258	F 1	6JL1964	0.00236 )	( 1265	C* 2	10AU1964	C.00224 )
( 1268	E 2	15AU1964	0.00547 )	( 1275	C 2	17SE1964	C.00645 )	( 1276	D 3	18SE1964	C.01118 )
( 1284	E 6	17SE1964	0.00318 )	( 1285	F 1	15SE1964	0.00582 )	( 1445	B 6	14OC1964	C.00652 )
( 1289	C 7	14OC1964	0.00440 )	( 1302	E 5	13OC1964	0.00405 )	( 1309	C* 1	10NO1964	0.00161 )
( 1569	GS17	5OC1967	0.00149 )	( 1573	GS21	6OC1967	0.00112 )	(			

*Nitzschia macilenta* Grev.

*Nitzschia macilenta* Greville, Quart. J. Micr. Sci., 7:83, pl. 6, figs. 8-9. 1859.

572 NIMACILQ TCT NO OF STATIONS 86

(60973	CH	1876	0.02362 )	( 3541	CH	1FE1881	0.07825 )	(46921	CH	23NO1945	C.00388 )
(46917	CH	12JA1946	0.00028 )	(46923	CH	22NO1946	0.00437 )	(46920	CH	20DE1946	C.00277 )
(46905	CH	JAI1947	0.00123 )	(46906	CH	MY1947	C.00066 )	(46907	CH	JL1947	C.00148 )
(46922	CH	21AU1947	0.00097 )	(46747	EV	1AU1937	C.00990 )	(46765	EV	30AU1937	C.00558 )
(46748	EV	13OC1937	0.02135 )	(46749	EV	12MR1938	0.04855 )	(46751	EV	30MR1938	C.01117 )
( 1244	F 1	11JN1964	0.00110 )	( 1245	F 2	11JN1964	0.00346 )	( 1246	F 3	11JN1964	0.01195 )
( 1279	E 1	16SE1964	0.00393 )	( 1285	F 1	15SE1964	C.01747 )	( 1286	F 2	15SE1964	C.01095 )
( 1302	E 5	13OC1964	0.00810 )	( 1304	F 1	11CC1964	0.01729 )	( 1305	F 2	11OC1964	C.00863 )
( 1306	F 3	11OC1964	0.00832 )	( 1323	F 1	6NO1964	C.00697 )	( 1324	F 2	6NC1964	C.00466 )
( 1325	F 3	6NO1964	0.00504 )	( 1337	C 3	2MR1967	0.00441 )	( 1338	C 3	28MR1967	C.00132 )
( 1340	C 7	28MR1967	0.00073 )	( 1344	C 3	25AP1967	C.00165 )	( 1345	C 5	25AP1967	C.00390 )
( 1346	C 7	21AP1967	0.00134 )	( 1347	E 2	23AP1967	0.00325 )	( 1348	E 5	23AP1967	C.00274 )
( 1374	E 2	7MY1967	0.00299 )	( 1410	A 6	24MY1967	0.00564 )	( 1415	E 3	28MY1967	C.00225 )
( 1437	E 3	15JN1967	0.00269 )	( 1438	E 5	14JN1967	0.00363 )	( 1504	A 3	28AU1967	C.00247 )
( 1377	GS 1	5MY1967	0.00396 )	( 1382	GS 6	10MY1967	0.01110 )	( 1383	GS 7	10MY1967	C.00267 )
( 1384	GS 8	10MY1967	0.00185 )	( 1385	GS 9	10MY1967	0.00471 )	( 1387	GS11	12MY1967	C.01980 )
( 1388	GS12	12MY1967	0.08446 )	( 1389	GS13	12MY1967	0.12634 )	( 1390	GS14	12MY1967	C.01174 )
( 1391	GS15	12MY1967	0.02873 )	( 1392	GS16	12MY1967	C.04007 )	( 1393	GS17	13MY1967	C.02192 )
( 1394	GS18	13MY1967	0.02236 )	( 1395	GS19	13MY1967	0.00352 )	( 1396	GS20	13MY1967	C.00222 )
( 1397	GS21	13MY1967	0.00131 )	( 1398	GS22	14MY1967	0.01214 )	( 1558	GS 5	4CC1967	C.00793 )
( 1559	GS 7	4OC1967	0.00350 )	( 1561	GS 9	4CC1967	0.00587 )	( 1563	GS11	5OC1967	C.00935 )
( 1564	GS12	5OC1967	0.00165 )	( 1565	GS13	5OC1967	C.00507 )	( 1566	GS14	5OC1967	C.00917 )
( 1567	GS15	5OC1967	0.02699 )	( 1568	GS16	5OC1967	0.01299 )	( 1569	GS17	5OC1967	C.03122 )
( 1570	GS18	5OC1967	0.10508 )	( 1571	GS19	6CC1967	C.00059 )	( 1573	GS21	6CC1967	C.00112 )
( 1574	GS22	6OC1967	0.00288 )	( 1575	GS28	6OC1967	0.00258 )	( 1526	MO 1	20SE1967	C.01707 )
( 1527	TR 1	20SE1967	0.00629 )	( 1528	SB 1	20SE1967	0.01444 )	( 1529	KW 1	20SE1967	C.04797 )
( 1551	ES 1	5OC1967	0.00799 )	( 1552	SM 1	6OC1967	0.01321 )	( 1550	MR 1	5OC1967	C.01239 )
( 1553	SG 1	6OC1967	0.01469 )	( 1426	MS 2	29MY1967	C.01050 )	( 1404	MC 2	10MY1967	0.02541 )
( 1407	SM 2	14MY1967	0.00597 )	( 1406	GB 2	13MY1967	0.00270 )	(			

*Nitzschia palea* (Kütz.) Wm. Smith

*Synedra palea* Kützling, Bacill., p. 63, pl. 3, fig. 27, pl. 4, fig. 2. 1844.  
*Nitzschia palea* (Kütz.) Wm. Smith, Syn. British Diat., Vol. 2, p. 89. 1856.

573 NIPALEA TCT NO OF STATIONS 70

(46910	CH	0C1945	0.00218 )	(46921	CH	23NO1945	C.00065 )	(46917	CH	12JA1946	C.00028 )
(46915	CH	20FE1946	0.00569 )	(46914	CH	19AP1946	0.00107 )	(46924	CH	10MY1946	0.00071 )
(46923	CH	22NO1946	0.00437 )	(46905	CH	MY1947	0.00455 )	(46916	CH	4MY1947	C.00034 )
(46919	CH	5JN1947	0.00152 )	(46907	CH	JL1947	0.00197 )	(46922	CH	21AU1947	C.03926 )
(46758	EV	5JN1937	0.00357 )	(46743	EV	20JN1937	0.00428 )	(46770	EV	9JL1937	C.00596 )
(46764	EV	17JL1937	0.00250 )	(46757	EV	25JL1937	0.04333 )	(46747	EV	1AU1937	C.00646 )
(46763	EV	23AU1937	0.08117 )	(46752	EV	15SE1937	C.08707 )	(46750	EV	24SE1937	C.04242 )
(46744	EV	6OC1937	0.02439 )	(46767	EV	27CC1937	C.05416 )	(46768	EV	16MR1938	C.01470 )
(46762	EV	18MR1938	0.08822 )	(46761	EV	27MY1938	0.00273 )	( 1252	C* 1	16JL1964	C.00558 )
( 1254	D 2	15JL1964	0.00383 )	( 1256	E 2	14JL1964	0.00183 )	( 1258	F 1	6JL1964	C.00472 )
( 1260	F 3	6JL1964	0.00382 )	( 1272	C* 1	10SE1964	C.00821 )	( 1279	E 1	16SE1964	C.00785 )
( 1285	F 1	15SE1964	0.00582 )	( 1302	E 5	13OC1964	0.00405 )	( 1452	E 2	14JL1967	C.00426 )
( 1454	E 5	15JL1967	0.00200 )	( 1532	A 3	18SE1967	0.00657 )	( 1538	E 5	23SE1967	C.00552 )
( 1541	E 2	11OC1967	0.00532 )	( 1542	E 3	11OC1967	0.01017 )	( 1555	GS 2	3OC1967	C.00353 )
( 1559	GS 7	4OC1967	0.00350 )	( 1565	GS13	5OC1967	0.00507 )	( 1544	MU 1	2OC1967	C.03098 )
( 1546	LU 1	2OC1967	0.08003 )	( 1520	HC 1	18SE1967	C.00471 )	( 1521	SH 1	18SE1967	C.25964 )
( 1522	BH 1	18SE1967	0.00547 )	( 1523	RA 1	19SE1967	0.00923 )	( 1526	MO 1	20SE1967	C.02845 )
( 1527	TR 1	20SE1967	0.10063 )	( 1528	SB 1	20SE1967	0.04332 )	( 1529	KW 1	20SE1967	C.01199 )
( 1530	FR 1	24SE1967	0.06001 )	( 1545	WL 1	2OC1967	0.25677 )	( 1549	MQ 1	4OC1967	C.01370 )
( 1551	ES 1	5OC1967	0.01598 )	( 1552	SM 1	6CC1967	0.00660 )	( 1550	MR 1	5OC1967	C.03593 )
( 1553	SG 1	6OC1967	0.00734 )	( 1426	MS 2	29MY1967	0.03150 )	( 1417	FO 2	22MY1967	C.00374 )
( 1350	BH 2	19AP1967	0.30616 )	( 1401	MO 2	6MY1967	0.01764 )	( 1402	TR 2	6MY1967	C.01624 )
( 1400	SB 2	6MY1967	0.01191 )	( 1352	KW 2	21AP1967	0.01718 )	( 1354	GH 2	25AP1967	C.00690 )
( 1423	WA 2	25MY1967	0.00428 )	(				(			

*Nitzschia palea* var. *sumatrana* Hust.

*Nitzschia palea* var. *sumatrana* Hustedt, Arch. Hydrobiol. Suppl. Bd., 15:483, pl. 41, fig. 10. 1938.

575 NIPALEVS TOT NO OF STATIONS 1  
( 1323 F 1 6NO1964 0.00139 ) (

*Nitzschia paleacea* Grun.

*Nitzschia paleacea* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 68, figs. 9-10. 1881.

574 NIPALEAC TOT NO OF STATIONS 1  
( 1544 MU 1 20C1967 0.02855 ) (

*Nitzschia parvula* Wm. Smith

*Nitzschia parvula* Wm. Smith, Syn. British Diat., Vol. 1, p. 41, pl. 13, fig. 106. 1853.

576 NIPARVUL TOT NO OF STATIONS 1  
( 1426 PS 2 25MY1967 0.02100 ) (

*Nitzschia recta* Hantz.

*Nitzschia recta* Hantzsch ex Rabenhorst, Alg. Sachsens resp. Mitteleuropas Exsicc., No. 1283. 1860.

577 NIRECIA TOT NO OF STATIONS 198

160973	CH	1876	0.04724	(	13540	CH	11MY1879	0.01398	(	13541	CH	1FE1881	C.04691	)	
(	3507	CH	19FE1881	0.02264	(	46521	CH	23NO1945	0.00453	(	46917	CH	12JA1946	0.00139	)
146915	CH	20FE1946	0.02845	(	46914	CH	15AP1946	0.00320	(	46924	CH	10MY1946	0.00282	)	
146923	CH	22NO1946	0.00219	(	46920	CH	20DE1946	0.00123	(	46905	CH	JA1947	0.00245	)	
146909	CH	MR1947	0.00455	(	46516	CH	4MY1947	0.00543	(	46919	CH	5JN1947	C.00455	)	
146907	CH	JL1947	0.01381	(	46522	CH	21AU1947	0.01502	(	46758	EV	5JN1937	C.00357	)	
146771	EV	11JN1937	0.00238	(	46743	EV	20JN1937	0.00856	(	46770	EV	9JL1937	C.00596	)	
146764	EV	17JL1937	0.01612	(	46757	EV	25JL1937	0.02407	(	46747	EV	1AU1937	C.01485	)	
146750	EV	24SE1937	0.00471	(	46767	EV	27OC1937	0.00387	(	46768	EV	16MR1938	C.01470	)	
146751	EV	30MR1938	0.01117	(	1223	B 3	18MY1964	0.05000	(	1224	B 4	18MY1964	C.05411	)	
(	1225	C 6	15MY1964	0.05880	(	1226	C 7	16MY1964	0.13699	(	1227	C* 2	13MY1964	C.03509	)
(	1228	D 2	14MY1964	0.27248	(	1229	D 5	14MY1964	0.35525	(	1230	E 2	16MY1964	C.21925	)
(	1231	E 3	16MY1964	0.62616	(	1232	E 5	16MY1964	C.40697	(	1233	B 3	5JN2964	0.04763	)
(	1235	C 7	16JN1964	0.00282	(	1439	B 6	5JN1964	0.02997	(	1236	C* 1	8JN1964	C.01050	)
(	1237	C* 2	8JN1964	C.03609	(	1238	D 3	11JN1964	C.03000	(	1239	D 4	11JN1964	C.01509	)
(	1240	D 6	10JN1964	0.10738	(	1241	E 2	13JN1964	C.07393	(	1242	E 3	13JN1964	C.06444	)
(	1243	E 6	13JN1964	0.14616	(	1244	F 1	11JN1964	C.14144	(	1245	F 2	11JN1964	C.09335	)
(	1246	F 3	11JN1964	0.05379	(	1249	C 3	8JL1964	0.00272	(	1252	C* 1	16JL1964	C.00279	)
(	1255	D 5	15JL1964	0.00257	(	1256	E 2	14JL1964	0.01282	(	1257	E 3	14JL1964	C.01196	)
(	1258	F 1	6JL1964	0.01180	(	1259	F 2	6JL1964	C.00930	(	1260	F 3	6JL1964	C.01146	)
(	1268	E 2	15AU1964	0.00547	(	1270	F 1	1CAU1964	0.00272	(	1271	C 7	22SE1964	C.00653	)
(	1274	D 1	17SE1964	0.00469	(	1279	E 1	16SE1964	0.00393	(	1284	E 6	17SE1964	0.00318	)
(	1285	F 1	15SE1964	0.03494	(	1288	B 3	15OC1964	0.00218	(	1289	C 7	14OC1964	0.01319	)
(	1290	C* 1	16OC1964	0.00379	(	1292	D 1	15OC1964	0.01118	(	1294	D 3	15OC1964	0.00330	)
(	1295	D 4	15CC1964	0.00595	(	1297	D 6	14OC1964	0.00762	(	1298	E 1	12OC1964	C.00808	)
(	1299	E 2	12OC1964	0.01571	(	1300	E 3	13OC1964	C.01074	(	1302	E 5	13OC1964	C.00810	)
(	1303	E 6	13OC1964	0.00560	(	1304	F 1	11OC1964	C.01976	(	1305	F 2	11OC1964	C.02415	)
(	1306	F 3	11OC1964	0.04158	(	1307	B 6	NO1964	C.00361	(	1310	C* 2	10NO1964	C.00227	)
(	1316	D 6	9NO1964	0.00378	(	1317	E 1	6NO1964	C.00191	(	1318	E 2	7NO1964	0.00190	)
(	1319	E 3	7NO1964	0.00785	(	1320	E 4	7NO1964	0.00827	(	1321	E 5	7NO1964	C.00958	)
(	1322	E 6	7NO1964	0.01333	(	1323	F 1	6NO1964	0.00139	(	1324	F 2	6NO1964	C.00233	)
(	1325	F 3	6NO1964	0.00252	(	1336	C 3	27JA1967	0.00963	(	1337	C 3	2MR1967	0.04997	)
(	1338	C 3	28MR1967	0.18512	(	1339	C 5	28MR1967	0.30866	(	1340	C 7	28MR1967	C.07417	)
(	1341	A 3	19AP1967	0.04448	(	1342	A 4	19AP1967	0.16422	(	1343	A 6	19AP1967	C.02709	)
(	1344	C 3	25AP1967	0.01489	(	1345	C 5	25AP1967	0.09155	(	1346	C 7	21AP1967	C.06409	)
(	1347	E 2	23AP1967	0.13495	(	1348	E 5	23AP1967	0.17272	(	1368	A 3	4MY1967	C.14138	)
(	1369	A 4	4MY1967	0.01864	(	1370	A 6	3MY1967	0.10358	(	1372	C 5	5MY1967	C.16314	)
(	1373	C 7	5MY1967	0.00856	(	1374	E 2	7MY1967	0.01793	(	1375	E 3	7MY1967	0.02166	)
(	1376	E 5	6MY1967	0.08995	(	1410	A 6	24MY1967	0.03383	(	1411	C 3	31MY1967	C.01641	)
(	1412	C 5	31MY1967	0.02525	(	1413	C 7	25MY1967	0.00316	(	1415	E 3	28MY1967	0.00450	)
(	1432	A 4	13JN1967	0.01533	(	1433	C 3	17JN1967	0.00646	(	1434	C 5	17JN1967	C.00299	)
(	1435	C 7	13JN1967	0.00631	(	1436	E 2	15JN1967	0.00362	(	1438	E 5	14JN1967	C.00363	)
(	1449	C 3	16JL1967	0.00764	(	1532	A 3	18SE1967	0.00329	(	1538	E 5	23SE1967	C.00552	)
(	1377	GS 1	9MY1967	0.00396	(	1378	GS 2	9MY1967	0.00841	(	1380	GS 4	9MY1967	C.01177	)
(	1381	GS 5	10MY1967	0.00954	(	1382	GS 6	10MY1967	0.01110	(	1383	GS 7	10MY1967	C.01604	)
(	1384	GS 8	10MY1967	0.01664	(	1385	GS 9	10MY1967	0.00942	(	1386	GS 10	12MY1967	0.00575	)
(	1387	GS 11	12MY1967	0.11090	(	1388	GS 12	12MY1967	0.04827	(	1389	GS 13	12MY1967	C.04383	)
(	1390	GS 14	12MY1967	0.22901	(	1391	GS 15	12MY1967	0.20591	(	1392	GS 16	12MY1967	C.03390	)
(	1393	GS 17	13MY1967	0.06027	(	1394	GS 18	13MY1967	0.66226	(	1395	GS 19	13MY1967	C.06576	)
(	1396	GS 20	13MY1967	0.00296	(	1397	GS 21	13MY1967	0.01112	(	1398	GS 22	14MY1967	C.00304	)
(	1557	GS 4	30C1967	0.00374	(	1560	GS 8	40C1967	0.00472	(	1563	GS 11	50C1967	0.00468	)
(	1567	GS 15	50C1967	0.00159	(	1568	GS 16	50C1967	C.00144	(	1569	GS 17	50C1967	C.04757	)
(	1570	GS 18	50C1967	0.02975	(	1571	GS 19	60C1967	0.00117	(	1573	GS 21	60C1967	C.00224	)



( 1575	GS28	60C1967	0.00125 )	( 1544	MU 1	20C1967	0.00477 )	( 1546	LU 1	20C1967	0.01501 )
( 1520	HO 1	18SE1967	0.02829 )	( 1521	SH 1	18SE1967	0.05193 )	( 1522	BH 1	18SE1967	0.01641 )
( 1526	MO 1	20SE1967	0.01707 )	( 1527	TR 1	20SE1967	0.02516 )	( 1528	SB 1	20SE1967	0.01444 )
( 1545	WL 1	20C1967	0.04054 )	( 1552	SM 1	60C1967	0.00660 )	( 1550	PR 1	50C1967	0.01607 )
( 1553	SG 1	60C1967	0.01469 )	( 1428	MU 2	29MY1967	0.00301 )	( 1426	PS 2	29MY1967	0.05249 )
( 1351	MI 2	21AP1967	0.01241 )	( 1427	LU 2	29MY1967	0.08475 )	( 1417	HO 2	22MY1967	0.02991 )
( 1418	SH 2	22MY1967	0.04666 )	( 1350	BH 2	19AP1967	0.02643 )	( 1425	RA 2	25MY1967	0.02652 )
( 1399	PW 2	5MY1967	0.02040 )	( 1401	MO 2	6MY1967	0.04116 )	( 1402	TR 2	6MY1967	0.08122 )
( 1400	SB 2	6MY1967	0.01787 )	( 1352	KW 2	21AP1967	0.02577 )	( 1354	GH 2	25AP1967	0.01381 )
( 1429	WL 2	29MY1967	0.02123 )	( 1403	CA 2	10MY1967	0.06539 )	( 1404	MQ 2	10MY1967	0.02541 )
( 1405	ES 2	12MY1967	0.07095 )	( 1407	SM 2	14MY1967	0.04180 )	( 1349	CI 2	19AP1967	0.02155 )
( 1419	BU 2	23MY1967	0.05492 )	( 1420	IH 2	23MY1967	0.01511 )	( 1421	CH 2	23MY1967	0.01735 )
( 1422	GA 2	23MY1967	0.05109 )	( 1423	WA 2	25MY1967	0.09421 )	( 1424	KN 2	25MY1967	0.01332 )

*Nitzschia romana* Grun.

*Nitzschia romana* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 69, figs. 12-13. 1881.

578 NIRCANA TOT NO OF STATIONS 48

( 46917	CH	12JA1946	0.00082 )	( 46515	CH	20FE1946	0.00569 )	( 46924	CH	10MY1946	0.00141 )
( 46923	CH	22NO1946	0.00437 )	( 46516	CH	4MY1947	0.00034 )	( 46919	CH	5JUN1947	0.00303 )
( 46747	EV	1AU1937	0.00248 )	( 46767	EV	27OC1937	0.00387 )	( 1230	E 2	16MY1964	0.00296 )
( 1240	D 6	10JUN1964	0.00307 )	( 1243	E 6	13JUN1964	0.00418 )	( 1244	F 1	11JUN1964	0.00219 )
( 1440	B 6	11JUL1964	0.00365 )	( 1258	F 1	6JUL1964	0.00236 )	( 1260	F 3	6JUL1964	0.00191 )
( 1264	C* 1	10AUL1964	0.02510 )	( 1265	C* 2	10AUL1964	0.00224 )	( 1266	D 3	18AUL1964	0.00351 )
( 1275	D 2	17SE1964	0.00645 )	( 1279	E 1	16SE1964	0.00785 )	( 1285	F 1	15SE1964	0.01165 )
( 1304	F 1	11OC1964	0.00247 )	( 1307	B 6	NO1964	0.00361 )	( 1308	C 7	6NO1964	0.00304 )
( 1320	E 4	7NO1964	0.00207 )	( 1343	A 6	19AP1967	0.00069 )	( 1536	E 2	24SE1967	0.00273 )
( 1543	E 5	10OC1967	0.00718 )	( 1387	GS11	12MY1967	0.00396 )	( 1398	GS22	14MY1967	0.00304 )
( 1555	GS 2	30C1967	0.00353 )	( 1559	GS 7	40C1967	0.00350 )	( 1564	GS12	50C1967	0.00165 )
( 1522	BH 1	18SE1967	0.00182 )	( 1526	MO 1	20SE1967	0.01707 )	( 1527	TR 1	20SE1967	0.00629 )
( 1529	KW 1	20SE1967	0.01199 )	( 1531	GH 1	25SE1967	0.00845 )	( 1550	PR 1	50C1967	0.02478 )
( 1428	MU 2	29MY1967	0.00301 )	( 1351	MI 2	21AP1967	0.00310 )	( 1417	HO 2	22MY1967	0.00748 )
( 1350	BH 2	19AP1967	0.01762 )	( 1401	MO 2	6MY1967	0.01764 )	( 1402	TR 2	6MY1967	0.00541 )
( 1400	SB 2	6MY1967	0.00596 )	( 1352	KW 2	21AP1967	0.00859 )	( 1407	SM 2	14MY1967	0.01194 )

*Nitzschia sigmoidea* (Nitz.) Wm. Smith

*Bacillaria sigmoidea* Nitzsch, Neue Schrift. Naturforsch. Ges. Halle, 3(1):104. 1817.

575 NISIGMCI TOT NO OF STATIONS 25

( 1337	C 3	2MR1967	0.00147 )	( 1341	A 3	19AP1967	0.00108 )	( 1396	GS20	13MY1967	0.00222 )
( 1554	GS 1	30C1967	0.00356 )	( 1565	GS13	50C1967	0.01014 )	( 1568	GS16	50C1967	0.00144 )
( 1569	GS17	50C1967	0.00149 )	( 1575	GS28	60C1967	0.00516 )	( 1547	PS 1	20C1967	0.00798 )
( 1526	MO 1	20SE1967	0.01707 )	( 1527	TR 1	20SE1967	0.01258 )	( 1529	KW 1	20SE1967	0.01199 )
( 1530	FR 1	24SE1967	0.01000 )	( 1531	GH 1	25SE1967	0.00845 )	( 1552	SM 1	60C1967	0.00660 )
( 1550	MR 1	50C1967	0.02478 )	( 1553	SG 1	60C1967	0.00734 )	( 1428	PU 2	29MY1967	0.00301 )
( 1417	HO 2	22MY1967	0.00748 )	( 1418	SH 2	22MY1967	0.01555 )	( 1350	BH 2	19AP1967	0.02863 )
( 1401	MO 2	6MY1967	0.00588 )	( 1404	MQ 2	10MY1967	0.02541 )	( 1407	SM 2	14MY1967	0.01194 )
( 1349	CI 2	19AP1967	0.00359 )								

*Nitzschia sinuata* var. *tabellaria* (Grun.) Grun.

*Denticula tabellaria* Grunow, Verh. Zool.-Bot. Ges. Wien, 12:548. 1862.

*Nitzschia sinuata* var. *tabellaria* (Grun.) Grunow in: Van Heurck, Syn. Diat. Belgique, p. 176, pl. 60, figs. 12-13. 1885.

580 NISINUVT TOT NO OF STATIONS 3

( 1530	FR 1	24SE1967	0.01000 )	( 1545	WL 1	20C1967	0.00676 )	( 1550	PR 1	50C1967	0.01239 )
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*Nitzschia spiculoides* Hust.

*Nitzschia spiculoides* Hustedt, Instit. Parcs. Nat. Congo Belge, Expl. Parc Nat. Albert, Mission Damas (1935-1936), Fasc. 8, p. 151, pl. 13, figs. 5-6. 1949.

582 NISPICUL TOT NO OF STATIONS 8

( 1258	F 1	6JUL1964	0.00944 )	( 1259	F 2	6JUL1964	0.00930 )	( 1260	F 3	6JUL1964	0.00191 )
( 1300	E 3	13OC1964	0.00358 )	( 1536	E 2	24SE1967	0.00273 )	( 1380	ES 4	9MY1967	0.00673 )
( 1544	MU 1	20C1967	0.00477 )	( 1522	BH 1	18SE1967	0.00365 )				

*Nitzschia subacicularis* Hust.

*Nitzschia subacicularis* Hustedt in: A. Schmidt, Atlas Diat., pl. 348, fig. 76. 1922.

583 NISACICU TCT NO OF STATIONS 1  
( 1268 E 2 15AU1964 0.00274 ) (

*Nitzschia sublinearis* Hust.

*Nitzschia sublinearis* Hustedt in: Pascher, Süßw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 411, fig. 786. 1930.

581 NISLINEA TCT NO OF STATIONS 9  
( 1522 BH 1 18SE1967 0.03100 ) ( 1523 RA 1 19SE1967 0.00923 ) ( 1526 MO 1 20SE1967 0.03414 )  
( 1528 SB 1 20SE1967 0.08663 ) ( 1545 WL 1 20C1967 0.33110 ) ( 1550 PR 1 50C1967 0.03717 )  
( 1417 HQ 2 22MY1967 0.01122 ) ( 1350 BH 2 19AP1967 0.01762 ) ( 1420 JH 2 23MY1967 0.01511 )

*Nitzschia thermalis* (Ehr.) Auersw.

*Pinnularia thermalis* Ehrenberg, Abh. Akad. Wiss. Berlin, 1841:21. 1843.  
*Nitzschia thermalis* (Ehr.) Auerswald ex Rabenhorst, Alg. Sachsens resp. Mitteleuropas Exsicc., No. 1064. 1860.

584 NITHERMA TCT NO OF STATIONS 2  
( 1264 C 1 10AU1964 0.00193 ) ( 1532 A 3 18SE1967 0.00329 ) (

*Nitzschia tropica* Hust.

*Nitzschia tropica* Hustedt, Instit. Parcs Nat. Congo Belge, Expl. Parc Nat. Albert, Mission Damas (1935-1936), Fasc. 8, p. 147, pl. 11, figs. 34-48. 1949.

585 NITROPIC TCT NO OF STATIONS 2  
( 146762 EV 18MR1938 0.02206 ) ( 1258 F 1 6JL1964 0.00236 ) (

*Nitzschia tryblionella* Hantz.

*Nitzschia tryblionella* Hantzsch ex Rabenhorst, Alg. Sachsens resp. Mitteleuropas Exsicc., No. 984. 1860.

586 NITRYBLI TCT NO OF STATIONS 1  
( 1552 SM 1 60C1967 0.00660 ) (

*Nitzschia tryblionella* var. *debilis* (Arnott) A. Mayer

*Nitzschia debilis* Arnott ex Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):68. 1880.  
*Nitzschia tryblionella* var. *debilis* (Arnott) A. Mayer, Ber. Naturw. Ver. Regensburg, 14:295, pl. 16, fig. 16. 1913.

587 NITRYBVD TCT NO OF STATIONS 1  
( 146764 EV 17JL1937 0.00806 ) (

*Nitzschia tryblionella* var. *levidensis* (Wm. Smith) Grun.

*Tryblionella levidensis* Wm. Smith, Syn. British Diat., Vol. 2, p. 89. 1856.  
*Nitzschia tryblionella* var. *levidensis* (Wm. Smith) Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):70. 1880.

588 NITRYBVL TCT NO OF STATIONS 4  
( 1556 GS 3 30C1967 0.00521 ) ( 1572 GS 20 60C1967 0.00090 ) ( 1545 WL 1 20C1967 0.00676 )  
( 1401 MO 2 6MY1967 0.01764 ) (

# Species incertae sedis

## Nitzschia sp. #1. (aff. N. lancettula O. Müll.)

589 NISPECCA TCT NC CF STATIONS 120

(46910	CH	GC1945	0.00546	(46921	CF	23NC1945	0.00194	(46917	CH	12JA1946	0.00028
(46915	CH	20FE1946	0.01707	(46914	CH	19AP1946	0.00641	(46924	CH	10MY1946	0.00141
(46923	CH	22NO1946	0.00874	(46920	CH	20CE1946	0.00031	(46905	CH	JA1947	0.00735
(46909	CH	MR1947	0.00911	(46916	CH	4MY1947	0.00170	(46906	CH	MY1947	0.00929
(46919	CH	5JN1947	0.09863	(46907	CH	JL1947	0.00099	(46922	CH	21AU1947	0.00291
(46758	EV	5JN1937	0.04636	(46771	EV	11JN1937	0.00238	(46764	EV	17JL1937	0.04835
(46757	EV	25JL1937	0.01926	(46747	EV	1AU1937	0.00495	(46763	EV	23AU1937	0.02029
(46752	EV	15SE1937	0.06530	(46760	EV	22SE1937	0.00492	(46744	EV	60C1937	0.00975
(46767	EV	27OC1937	0.00387	(46768	EV	16MR1938	0.01470	(46762	EV	18MR1938	0.04411
(1225	C 6	15MY1964	0.00392	(1228	D 2	14MY1964	0.00389	(1229	D 5	14MY1964	0.00423
(1230	E 2	16MY1964	0.00593	(1231	E 3	16MY1964	0.03180	(1232	E 5	16MY1964	0.05218
(1233	B 3	5JN2964	0.00238	(1238	D 3	11JN1964	0.00400	(1239	D 4	11JN1964	0.00116
(1240	D 6	10JN1964	0.00153	(1241	E 2	13JN1964	0.00739	(1242	E 3	13JN1964	0.00749
(1243	E 6	13JN1964	0.00418	(1244	F 1	11JN1964	0.00548	(1245	F 2	11JN1964	0.00692
(1246	F 3	11JN1964	0.01195	(1252	C* 1	16JL1964	0.00837	(1254	D 2	15JL1964	0.00383
(1256	E 2	14JL1964	0.01282	(1257	E 3	14JL1964	0.00479	(1258	F 1	6JL1964	0.01888
(1259	F 2	6JL1964	0.00310	(1260	F 3	6JL1964	0.00573	(1264	C* 1	10AU1964	0.00579
(1265	C* 2	10AU1964	0.00224	(1266	D 3	18AU1964	0.00351	(1267	D 6	18AU1964	0.00216
(1268	E 2	15AU1964	0.02188	(1269	E 3	15AU1964	0.01096	(1274	D 1	17SE1964	0.00469
(1285	F 1	15SE1964	0.02912	(1288	B 3	15OC1964	0.00218	(1445	B 6	14OC1964	0.00652
(1290	C* 1	16OC1964	0.00375	(1300	E 3	13OC1964	0.01790	(1304	F 1	11OC1964	0.00247
(1322	E 6	7NO1964	0.00333	(1337	C 2	2MR1967	0.00588	(1338	C 3	28MR1967	0.00661
(1339	C 5	28MR1967	0.04053	(1340	C 7	28MR1967	0.00291	(1341	A 3	19AP1967	0.00217
(1342	A 4	19AP1967	0.00180	(1343	A 6	19AP1967	0.00139	(1345	C 5	25AP1967	0.02924
(1347	E 2	23AP1967	0.00813	(1348	E 5	23AP1967	0.02467	(1368	A 3	4MY1967	0.00314
(1370	A 6	3MY1967	0.00230	(1372	C 5	5MY1967	0.00355	(1373	C 7	5MY1967	0.00570
(1374	E 2	7MY1967	0.00598	(1375	E 3	7MY1967	0.01684	(1376	E 5	6MY1967	0.00562
(1411	C 3	31FY1967	0.00410	(1412	C 5	31MY1967	0.00842	(1416	E 5	28MY1967	0.00437
(1433	C 3	17JN1967	0.00646	(1436	E 2	15JN1967	0.00362	(1449	C 3	16JL1967	0.01529
(1451	C 7	16JL1967	0.00197	(1453	E 3	15JL1967	0.00506	(1512	E 3	15SE1967	0.00393
(1536	E 2	24SE1967	0.00273	(1542	E 3	11CC1967	0.00509	(1381	GS 5	10MY1967	0.00477
(1383	GS 7	10MY1967	0.00802	(1384	GS 8	10MY1967	0.00555	(1385	GS 9	10MY1967	0.00235
(1386	GS10	12MY1967	0.00287	(1387	GS11	12MY1967	0.00396	(1394	GS18	13MY1967	0.00172
(1570	GS18	5OC1967	0.00992	(1574	GS22	6CC1967	0.00288	(1546	LU 1	20CC1967	0.00500
(1526	MO 1	20SE1967	0.02845	(1527	TR 1	20SE1967	0.01258	(1550	MR 1	5OC1967	0.01239
(1426	MS 2	25MY1967	0.01050	(1351	MI 2	21AP1967	0.00621	(1417	HC 2	22MY1967	0.01865
(1425	RA 2	25MY1967	0.00884	(1359	PI 2	5MY1967	0.00680	(1401	MO 2	6MY1967	0.00588
(1400	SB 2	6MY1967	0.01191	(1352	KW 2	21AP1967	0.00859	(1353	FR 2	23AP1967	0.01055
(1403	CA 2	10MY1967	0.01308	(1407	SM 2	14MY1967	0.00597	(1421	CH 2	23MY1967	0.01735
(1422	GA 2	23MY1967	0.01022	(1423	WA 2	25MY1967	0.02141	(1424	KN 2	25MY1967	0.01332

## Nitzschia sp. #2.

590 NISPECCA TCT NO OF STATIONS 258

(60973	CH	1876	0.07085	(3540	CH	11MY1879	0.06523	(3541	CH	1FE1881	0.17607
(3507	CH	19FE1881	0.03396	(46921	CH	23NO1945	0.11576	(46908	CH	DE1945	0.05035
(46917	CH	12JA1946	0.30635	(46915	CH	20FE1946	0.09105	(46914	CH	19AP1946	0.52107
(46924	CH	10MY1946	0.09171	(46923	CH	22NO1946	0.15736	(46920	CH	20DE1946	0.02003
(46905	CH	JA1947	0.01716	(46909	CH	MR1947	0.12295	(46912	CH	AP1947	0.05749
(46916	CH	4MY1947	0.01391	(46906	CH	MY1947	0.41016	(46919	CH	5JN1947	0.12291
(46907	CH	JL1947	0.11785	(46922	CH	21AU1947	0.07560	(46758	EV	5JN1937	1.29805
(46771	EV	11JN1937	0.66568	(46743	EV	20JN1937	0.37681	(46764	EV	17JL1937	0.12087
(46757	EV	25JL1937	0.00481	(46747	EV	1AU1937	0.09902	(46763	EV	23AU1937	0.08117
(46752	EV	15SE1937	0.02177	(46748	EV	13OC1937	0.32024	(46767	EV	27OC1937	0.03095
(46745	EV	12MR1938	0.06069	(46768	EV	16MR1938	0.07350	(46762	EV	18MR1938	0.04411
(46751	EV	30MR1938	0.04466	(46772	EV	18AP1938	0.01419	(46756	EV	27AP1938	0.11753
(46759	EV	19MY1938	0.05402	(46761	EV	27MY1938	0.05178	(46766	EV	14DE1938	0.03169
(1223	B 3	18MY1964	0.00781	(1224	B 4	18MY1964	0.02745	(1225	C 6	15MY1964	0.05880
(1226	C 7	16MY1964	0.17504	(1227	C* 2	13MY1964	0.01535	(1228	D 2	14MY1964	0.32698
(1229	D 5	14MY1964	0.21569	(1230	E 2	16MY1964	0.15706	(1231	E 3	16MY1964	0.54169
(1232	E 5	16MY1964	0.30436	(1233	B 3	5JN2964	0.03334	(1234	B 3	18JN1964	0.00281
(1235	C 7	16JN1964	0.00282	(1439	B 6	5JN1964	0.05594	(1236	C* 1	8JN1964	0.05601
(1237	C* 2	8JN1964	0.04640	(1238	D 3	11JN1964	0.16600	(1239	D 4	11JN1964	0.00696
(1240	D 6	10JN1964	0.53688	(1241	E 2	13JN1964	0.15081	(1242	E 3	13JN1964	0.20981
(1243	E 6	13JN1964	0.22551	(1244	F 1	11JN1964	0.08443	(1245	F 2	11JN1964	0.06915
(1246	F 3	11JN1964	0.05379	(1247	B 3	14JL1964	0.00427	(1248	B 3	24JL1964	0.00394
(1440	B 6	11JL1964	0.00737	(1441	B 6	24JL1964	0.00441	(1250	C 6	10JL1964	0.00411
(1251	C 7	16JL1964	0.00579	(1252	C* 1	16JL1964	0.00279	(1253	C* 2	16JL1964	0.01598
(1254	D 2	15JL1964	0.03448	(1255	D 5	15JL1964	0.00513	(1256	E 2	14JL1964	0.03297
(1257	E 3	14JL1964	0.11485	(1258	F 1	6JL1964	0.08259	(1259	F 2	6JL1964	0.05578
(1260	F 3	6JL1964	0.02865	(1261	B 3	2AU1964	0.00196	(1264	C* 1	10AU1964	0.00193
(1268	E 2	15AU1964	0.00274	(1269	E 3	15AU1964	0.01644	(1272	C* 1	10SE1964	0.01231
(1278	D 6	18SE1964	0.00384	(1279	E 1	16SE1964	0.01571	(1281	E 3	16SE1964	0.00785
(1284	E 6	17SE1964	0.00635	(1285	F 1	15SE1964	0.14559	(1287	F 3	15SE1964	0.00500
(1288	B 3	15OC1964	0.01088	(1445	B 6	14OC1964	0.00978	(1289	C 7	14OC1964	0.00440
(1291	C* 2	16OC1964	0.00245	(1293	D 2	15OC1964	0.00472	(1297	D 6	14OC1964	0.00762
(1298	E 1	12OC1964	0.00808	(1299	E 2	12OC1964	0.00943	(1300	E 3	13OC1964	0.03222
(1301	E 4	13OC1964	0.00442	(1302	E 5	13OC1964	0.02834	(1303	E 6	13OC1964	0.02239
(1304	F 1	11OC1964	0.01976	(1305	F 2	11OC1964	0.00690	(1306	F 3	11OC1964	0.00832
(1307	B 6	NO1964	0.01082	(1308	C 7	6NO1964	0.00912	(1310	C* 2	10NO1964	0.00227
(1314	D 4	9NO1964	0.00287	(1315	D 5	9NO1964	0.00455	(1316	D 6	9NO1964	0.00378
(1317	E 1	6NO1964	0.00383	(1318	E 2	7NO1964	0.00190	(1319	E 3	7NO1964	0.00524
(1320	E 4	7NO1964	0.01241	(1321	E 5	7NO1964	0.00319	(1322	E 6	7NO1964	0.00432
(1323	F 1	6NO1964	0.01254	(1324	F 2	6NO1964	0.00466	(1325	F 3	6NO1964	0.00252
(1336	C 3	27JA1967	0.00770	(1337	C 3	2MR1967	0.12199	(1338	C 3	28MR1967	0.01617
(1339	C 5	28MR1967	0.60173	(1340	C 7	28MR1967	0.15271	(1341	A 3	19AP1967	0.16597
(1342	A 4	19AP1967	0.42228	(1343	A 6	19AP1967	0.24316	(1344	C 3	25AP1967	0.27794
(1345	C 5	25AP1967	0.39569	(1346	C 7	21AP1967	0.31245	(1347	E 2	23AP1967	0.41623
(1348	E 5	23AP1967	1.34339	(1368	A 3	4MY1967	0.73516	(1369	A 4	4MY1967	0.27582
(1370	A 6	3MY1967	0.19105	(1371	C 3	4MY1967	0.59098	(1372	C 5	5MY1967	1.48957
(1373	C 7	5MY1967	0.30806	(1374	E 2	7MY1967	0.52301	(1375	C 3	7MY1967	0.92639

( 1376	E 5	6MY1967	0.51158 )	( 1408	A 3	23MY1967	0.20570 )	( 1409	A 4	23MY1967	0.04166 )
( 1410	A 6	24MY1967	0.33266 )	( 1411	C 3	31MY1967	0.31592 )	( 1412	C 5	31MY1967	0.38303 )
( 1413	C 7	25MY1967	0.13267 )	( 1414	E 2	28MY1967	0.05709 )	( 1415	E 3	28MY1967	0.15740 )
( 1416	E 5	28MY1967	0.15308 )	( 1431	A 3	12JN1967	0.02317 )	( 1432	A 4	13JN1967	0.22479 )
( 1433	C 3	17JN1967	0.41338 )	( 1434	C 5	17JN1967	0.14356 )	( 1435	C 7	13JN1967	0.11050 )
( 1436	E 2	15JN1967	0.10494 )	( 1437	E 3	15JN1967	0.07536 )	( 1438	E 5	14JN1967	0.12346 )
( 1446	A 3	11JL1967	0.00245 )	( 1449	C 3	16JL1967	0.06496 )	( 1450	C 5	16JL1967	0.00571 )
( 1451	C 7	16JL1967	0.00197 )	( 1452	E 2	14JL1967	0.00852 )	( 1453	E 3	15JL1967	0.07330 )
( 1504	A 3	28AU1967	0.00247 )	( 1505	A 4	28AU1967	0.01031 )	( 1508	C 3	25E1967	0.00400 )
( 1511	E 2	15E1967	0.00307 )	( 1512	E 3	15E1967	0.00393 )	( 1532	A 3	18SE1967	0.00329 )
( 1534	A 6	19SE1967	0.00620 )	( 1537	E 3	24SE1967	0.01294 )	( 1538	E 5	23SE1967	0.00552 )
( 1541	E 2	11OC1967	0.00532 )	( 1377	GS 1	9MY1967	0.18999 )	( 1378	GS 2	9MY1967	0.11354 )
( 1379	GS 3	9MY1967	0.06499 )	( 1380	GS 4	9MY1967	0.10762 )	( 1381	GS 5	10MY1967	0.05009 )
( 1382	GS 6	10MY1967	0.11380 )	( 1383	GS 7	10MY1967	0.08287 )	( 1384	GS 8	10MY1967	0.15713 )
( 1385	GS 9	10MY1967	0.13892 )	( 1386	GS10	12MY1967	0.11204 )	( 1387	GS11	12MY1967	0.27725 )
( 1388	GS12	12MY1967	0.25339 )	( 1389	GS13	12MY1967	0.10056 )	( 1390	GS14	12MY1967	0.24662 )
( 1391	GS15	12MY1967	0.20112 )	( 1392	GS16	12MY1967	0.12636 )	( 1393	GS17	13MY1967	0.34791 )
( 1394	GS18	13MY1967	1.02350 )	( 1395	GS19	13MY1967	0.08690 )	( 1396	GS20	13MY1967	0.01036 )
( 1397	GS21	13MY1967	0.03859 )	( 1398	GS22	14MY1967	0.21253 )	( 1554	GS 1	30C1967	0.02135 )
( 1557	GS 4	30C1967	0.01121 )	( 1560	GS 8	40C1967	0.01417 )	( 1562	GS10	50C1967	0.00247 )
( 1563	GS11	50C1967	0.00701 )	( 1564	GS12	50C1967	0.00165 )	( 1565	GS13	50C1967	0.00507 )
( 1567	GS15	50C1967	0.00953 )	( 1568	GS16	50C1967	0.00289 )	( 1569	GS17	50C1967	0.01932 )
( 1570	GS18	50C1967	0.01983 )	( 1571	GS19	60C1967	0.00176 )	( 1572	GS20	60C1967	0.00180 )
( 1573	GS21	60C1967	0.00224 )	( 1574	GS22	60C1967	0.00288 )	( 1575	GS28	60C1967	0.00645 )
( 1544	MU 1	20C1967	0.00238 )	( 1546	LU 1	20C1967	0.03501 )	( 1520	HO 1	18SE1967	0.01886 )
( 1521	SH 1	18SE1967	0.04616 )	( 1522	BH 1	18SE1967	0.02188 )	( 1526	MO 1	20SE1967	0.06827 )
( 1527	TR 1	20SE1967	0.01258 )	( 1528	SB 1	20SE1967	0.02888 )	( 1529	KW 1	20SE1967	0.15589 )
( 1530	FR 1	24SE1967	0.01000 )	( 1531	GH 1	25SE1967	0.03381 )	( 1545	WL 1	20C1967	0.02703 )
( 1549	MO 1	40C1967	0.02741 )	( 1551	ES 1	50C1967	0.02396 )	( 1552	SM 1	60C1967	0.06603 )
( 1550	MR 1	50C1967	0.06195 )	( 1553	SG 1	60C1967	0.02203 )	( 1428	MU 2	29MY1967	0.07533 )
( 1426	MS 2	29MY1967	0.97638 )	( 1351	MI 2	21AP1967	0.26067 )	( 1427	LU 2	29MY1967	0.82324 )
( 1417	HO 2	22MY1967	0.65799 )	( 1418	SH 2	22MY1967	0.07776 )	( 1350	BH 2	19AP1967	0.59911 )
( 1425	RA 2	25MY1967	0.22102 )	( 1399	PK 2	5MY1967	0.32644 )	( 1401	MO 2	6MY1967	0.43509 )
( 1402	TR 2	6MY1967	0.86636 )	( 1400	SB 2	6MY1967	0.30975 )	( 1352	KW 2	21AP1967	0.36076 )
( 1353	FR 2	23AP1967	0.04219 )	( 1354	GH 2	25AP1967	0.08976 )	( 1429	WL 2	29MY1967	0.33974 )
( 1403	CA 2	10MY1967	0.23539 )	( 1404	MC 2	10MY1967	0.05081 )	( 1405	ES 2	12MY1967	0.04515 )
( 1407	SM 2	14MY1967	0.08957 )	( 1349	CI 2	19AP1967	0.74718 )	( 1406	GB 2	13MY1967	0.04044 )
( 1419	BU 2	23MY1967	0.43940 )	( 1420	IH 2	23MY1967	0.18127 )	( 1421	CH 2	23MY1967	0.32963 )
( 1422	GA 2	23MY1967	0.29122 )	( 1423	WA 2	25MY1967	1.43879 )	( 1424	KN 2	25MY1967	0.46629 )

# Nitzschia sp. #5.

591 NISPECOE TCT NC OF STATIONS 61

( 3540	CH	11MY1879	0.00466 )	( 46509	CH	MR1947	0.00455 )	( 46906	CH	MY1847	0.00621 )
( 46907	CH	JUL1947	0.00099 )	( 46747	EV	1AU1937	0.00248 )	( 46752	EV	15SE1937	0.02177 )
( 1253	C' 2	16JUL1964	0.00456 )	( 1254	D 2	15JUL1964	0.00958 )	( 1256	E 2	14JUL1964	0.00916 )
( 1257	E 3	14JUL1964	0.01914 )	( 1258	F 1	6JUL1964	0.00236 )	( 1260	F 3	6JUL1964	0.00764 )
( 1279	E 1	16SE1964	0.00393 )	( 1287	F 3	15SE1964	0.00500 )	( 1445	B 6	14OC1964	0.00652 )
( 1374	E 2	7MY1967	0.02690 )	( 1375	E 3	7MY1967	0.01203 )	( 1376	E 5	6MY1967	0.00843 )
( 1412	C 5	31MY1967	0.01263 )	( 1414	E 2	28MY1967	0.00336 )	( 1432	A 4	13JN1967	0.01022 )
( 1433	C 3	17JN1967	0.00646 )	( 1436	E 2	15JN1967	0.00362 )	( 1446	A 3	11JL1967	0.00489 )
( 1447	A 4	11JL1967	0.00234 )	( 1450	C 5	16JL1967	0.00190 )	( 1452	E 2	14JL1967	0.00639 )
( 1453	E 3	15JL1967	0.00506 )	( 1511	E 2	15E1967	0.00307 )	( 1512	E 3	15E1967	0.01571 )
( 1379	GS 3	9MY1967	0.00619 )	( 1380	GS 4	9MY1967	0.00336 )	( 1381	GS 5	10MY1967	0.00954 )
( 1383	GS 7	10MY1967	0.03743 )	( 1384	GS 8	10MY1967	0.05176 )	( 1385	GS 9	10MY1967	0.00235 )
( 1386	GS10	12MY1967	0.00862 )	( 1392	GS16	12MY1967	0.01233 )	( 1394	GS18	13MY1967	0.05333 )
( 1395	GS19	13MY1967	0.00587 )	( 1397	GS21	13MY1967	0.00131 )	( 1398	GS22	14MY1967	0.00304 )
( 1555	GS 2	30C1967	0.00353 )	( 1560	GS 8	40C1967	0.00472 )	( 1544	MU 1	20C1967	0.00238 )
( 1521	SH 1	18SE1967	0.00577 )	( 1552	SM 1	60C1967	0.01981 )	( 1550	MR 1	50C1967	0.02478 )
( 1428	MU 2	29MY1967	0.00301 )	( 1426	MS 2	29MY1967	0.03150 )	( 1351	MI 2	21AP1967	0.00621 )
( 1427	LU 2	29MY1967	0.01211 )	( 1417	HO 2	22MY1967	0.01122 )	( 1350	BH 2	19AP1967	0.00441 )
( 1399	PK 2	5MY1967	0.00680 )	( 1352	KW 2	21AP1967	0.02577 )	( 1353	FR 2	23AP1967	0.01055 )
( 1354	GH 2	25AP1967	0.01726 )	( 1429	WL 2	29MY1967	0.03185 )	( 1403	CA 2	10MY1967	0.15692 )
( 1404	MO 2	10MY1967	0.01270 )	(							

# Nitzschia sp. #6.

592 NISPECOF TCT NO OF STATIONS 65

( 46924	CH	10MY1946	0.00071 )	( 46758	EV	5JN1937	0.00357 )	( 46764	EV	17JUL1937	0.02417 )
( 1224	B 4	18MY1964	0.00196 )	( 1231	E 3	16MY1964	0.00245 )	( 1439	B 6	5JN1964	0.00200 )
( 1243	E 6	13JN1964	0.00209 )	( 1257	E 3	14JL1964	0.00239 )	( 1258	F 1	6JL1964	0.00236 )
( 1260	F 3	6JL1964	0.00191 )	( 1268	E 2	15AU1964	0.00274 )	( 1269	E 3	15AU1964	0.00274 )
( 1337	C 3	2MR1967	0.00441 )	( 1338	C 3	28MR1967	0.10975 )	( 1339	C 5	28MR1967	0.00206 )
( 1340	C 7	28MR1967	0.00654 )	( 1341	A 3	19AP1967	0.01627 )	( 1342	A 4	19AP1967	0.21475 )
( 1343	A 6	19AP1967	0.00417 )	( 1344	C 3	25AP1967	0.00496 )	( 1345	C 5	25AP1967	0.30018 )
( 1346	C 7	21AP1967	0.00267 )	( 1347	E 2	23AP1967	0.03577 )	( 1348	E 5	23AP1967	0.21110 )
( 1368	A 3	4MY1967	0.00555 )	( 1369	A 4	4MY1967	0.00745 )	( 1370	A 6	3MY1967	0.01381 )
( 1372	C 5	5MY1967	0.04611 )	( 1373	C 7	5MY1967	0.00285 )	( 1374	E 2	7MY1967	0.02092 )
( 1375	E 3	7MY1967	0.01203 )	( 1376	E 5	6MY1967	0.01405 )	( 1412	C 5	31MY1967	0.01684 )
( 1433	C 3	17JN1967	0.00646 )	( 1434	C 5	17JN1967	0.00598 )	( 1511	E 2	15E1967	0.00307 )
( 1512	E 3	15E1967	0.00393 )	( 1379	GS 3	9MY1967	0.00309 )	( 1380	GS 4	9MY1967	0.00168 )
( 1382	GS 6	10MY1967	0.00220 )	( 1383	GS 7	10MY1967	0.00267 )	( 1384	GS 8	10MY1967	0.00370 )
( 1386	GS10	12MY1967	0.00575 )	( 1387	GS11	12MY1967	0.00396 )	( 1394	GS18	13MY1967	0.00344 )
( 1557	GS 4	30C1967	0.00374 )	( 1562	GS10	50C1967	0.00247 )	( 1566	GS14	50C1967	0.00183 )
( 1528	SB 1	20SE1967	0.01444 )	( 1545	WL 1	20C1967	0.01351 )	( 1551	ES 1	50C1967	0.00799 )
( 1550	MR 1	50C1967	0.01239 )	( 1428	MU 2	29MY1967	0.00301 )	( 1426	PS 2	29MY1967	0.01050 )
( 1351	MI 2	21AP1967	0.00310 )	( 1427	LU 2	29MY1967	0.02421 )	( 1417	HO 2	22MY1967	0.01842 )
( 1401	MO 2	6MY1967	0.01176 )	( 1402	TR 2	6MY1967	0.00541 )	( 1400	SB 2	6MY1967	0.01191 )
( 1354	GH 2	25AP1967	0.02244 )	( 1403	CA 2	10MY1967	0.01308 )	( 1349	CI 2	19AP1967	0.01796 )
( 1422	GA 2	23MY1967	0.00511 )	( 1423	WA 2	25MY1967	0.02141 )	(			

*Nitzschia* sp. #7.

593 NISPECCG TCT NO OF STATIONS 22

( 46758	EV	5JN1937	0.00357 )	( 46747	EV	1AU1937	0.00248 )	( 1268	E 2	15AU1964	C.C0274 )
( 1274	D 1	17SE1964	0.00469 )	( 1279	E 1	16SE1964	0.00393 )	( 1556	GS 3	30C1967	C.C0521 )
( 1572	GS20	6CC1967	0.00090 )	( 1544	MU 1	20C1967	C.C2859 )	( 1546	LU 1	2CC1967	C.28510 )
( 1521	SH 1	18SE1967	0.02885 )	( 1526	MO 1	20SE1967	0.00569 )	( 1530	FR 1	24SE1967	C.C6001 )
( 1531	GH 1	25SE1967	0.00845 )	( 1545	WL 1	20C1967	6.91939 )	( 1548	CA 1	30C1967	C.C1272 )
( 1549	MO 1	4CC1967	0.01370 )	( 1552	SM 1	60C1967	0.00660 )	( 1550	PR 1	50C1967	C.C7434 )
( 1417	HO 2	22MY1967	0.00748 )	( 1354	GH 2	25AP1967	0.00173 )	( 1429	WL 2	29MY1967	C.C1062 )
( 1404	MO 2	10MY1967	0.02541 )	(							

*Nitzschia* sp. #8.

594 NISPECCH TCT NO OF STATIONS 7

( 46752	EV	15SE1937	0.02177 )	( 1270	F 1	10AU1964	0.00272 )	( 1275	D 2	17SE1964	C.C0645 )
( 1285	F 1	15SE1964	0.02912 )	( 1554	GS 1	30C1967	0.00356 )	( 1546	LU 1	20C1967	C.C2001 )
( 1403	CA 2	10MY1967	C.C1308 )	(							

*Nitzschia* sp. #9.

595 NISPECCI TCT NO OF STATIONS 3

( 1340	C 7	28MR1967	0.00073 )	( 1341	A 3	19AP1967	C.C0108 )	( 1536	E 2	24SE1967	C.C0545 )
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*Nitzschia* sp. #10.

596 NISPECCJ TCT NO OF STATIONS 1

( 1250	C 6	10JL1964	0.00411 )	(							
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*Nitzschia* sp. #11.

597 NISPECCO TCT NO OF STATIONS 2

( 1272	C 1	10SE1964	0.00410 )	( 1550	PR 1	50C1967	C.C1239 )	(			
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*Nitzschia* sp. #12.

598 NISPECCOL TOT NO OF STATIONS 4

( 1550	MR 1	50C1967	0.03717 )	( 1426	MS 2	29MY1967	C.C01050 )	( 1350	BH 2	19AP1967	0.00661 )
( 1404	MO 2	10MY1967	0.01270 )	(							

*Nitzschia* sp. #14.

599 NISPECCON TCT NO OF STATIONS 1

( 1511	E 2	1SE1967	0.00307 )	(							
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*Nitzschia* sp. #15.

600 NISPECCO TOT NO OF STATIONS 4

( 1544	MU 1	20C1967	0.01668 )	( 1546	LU 1	2CC1967	C.C03001 )	( 1550	PR 1	50C1967	C.C02478 )
( 1428	MU 2	29MY1967	0.01205 )	(							

*Nitzschia* sp. #16.

601 NISPECCOP TOT NO OF STATIONS 4

( 1544	MU 1	20C1967	0.00715 )	( 1546	LU 1	20C1967	C.C00500 )	( 1529	KW 1	20SE1967	C.C01199 )
( 1545	WL 1	20C1967	0.03379 )	(							

*Nitzschia* sp. #17.

602 NISPECCQ TOT NO OF STATIONS 1

( 1546	LU 1	20C1967	0.02501 )	(							
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*Nitzschia* sp. #18.

603 NISPECOR TOT NO OF STATIONS 2

( 1522 BH 1 18SE1967 0.10029 ) ( 1550 MR 1 50C1967 0.01239 ) (

### Genus *Opephora* Petit

Petit, Miss. Sci. Cap Horn, 1882-1883, Bot., Vol. 5, p. 130. 1888.

Members of the genus *Opephora* find their primary habitat in periphyton communities. Occasional specimens are taken in plankton collections from Lake Michigan, especially in nearshore areas.

*Opephora ansata* Hohn and Hellerm.

*Opephora ansata* Hohn and Hellerman, Trans. American Micr. Soc., 82(3): 321, pl. 1, fig. 13, 1963.

606 OPSPECQB TOT NO OF STATIONS 37

( 60973 CH 1876 0.04724 )	( 3541 CH 1FE1881 0.00978 )	( 46921 CH 23NC1545 0.00065 )
( 46915 CH 20FE1946 0.00569 )	( 46924 CH 10MY1946 0.00071 )	( 46916 CH 4MY1947 0.00034 )
( 46922 CH 21AU1947 0.00097 )	( 46758 EV 5JN1937 0.02853 )	( 46764 EV 17JL1937 0.00806 )
( 46757 EV 25JL1937 0.01926 )	( 46747 EV 1AU1937 0.01733 )	( 46763 EV 23AU1937 0.34497 )
( 46752 EV 15SE1937 0.17414 )	( 46760 EV 22SE1937 0.00985 )	( 46744 EV 6CC1937 0.00975 )
( 46748 EV 13OC1937 0.06405 )	( 46767 EV 27CC1937 0.02708 )	( 46749 EV 12MR1938 0.02427 )
( 46768 EV 16MR1938 0.05880 )	( 46762 EV 18MR1938 0.17644 )	( 46759 EV 19MY1938 0.01013 )
( 1264 C* 1 10AU1964 0.00193 )	( 1279 E 1 16SE1964 0.00393 )	( 1285 F 1 15SE1964 0.01165 )
( 1303 E 6 13OC1964 0.00560 )	( 1340 C 7 28MR1967 0.00218 )	( 1538 E 5 23SE1967 0.08286 )
( 1541 E 2 11OC1967 0.01597 )	( 1543 E 5 10CC1967 0.01437 )	( 1388 GS12 12MY1967 0.00603 )
( 1352 GS16 12MY1967 0.00616 )	( 1394 GS18 13MY1967 0.00344 )	( 1358 GS22 14MY1967 0.00607 )
( 1567 GS15 50C1967 0.00318 )	( 1571 GS19 60C1967 0.00059 )	( 1574 GS22 60C1967 3.62423 )
( 1575 GS28 60C1967 0.00129 )		

*Opephora martyi* Hérib.

*Opephora martyi* Héribaud, Diat. Foss. Auvergne, Vol. 1, p. 43, pl. 8, fig. 20. 1902.

604 QPMARTYI TOT NO OF STATIONS 47

( 3540 CH 11MY1879 0.00466 )	( 46516 CH 4MY1947 0.00034 )	( 46768 EV 16MR1938 0.02940 )
( 1279 E 1 16SE1964 0.08639 )	( 1284 E 6 17SE1964 0.00318 )	( 1285 F 1 15SE1964 0.00582 )
( 1297 D 6 14OC1964 0.00190 )	( 1320 E 4 7NO1964 0.00207 )	( 1372 C 5 5MY1967 0.00355 )
( 1532 A 3 18SE1967 0.00329 )	( 1533 A 4 19SE1967 0.00464 )	( 1377 GS 1 9MY1967 0.00396 )
( 1388 GS12 12MY1967 0.01207 )	( 1390 GS14 12MY1967 0.00587 )	( 1392 GS16 12MY1967 0.00925 )
( 1396 GS20 13MY1967 0.00074 )	( 1554 GS 1 30C1967 0.00356 )	( 1557 GS 4 30C1967 0.00747 )
( 1558 GS 5 40C1967 0.00396 )	( 1565 GS13 50C1967 0.07099 )	( 1567 GS15 50C1967 0.00635 )
( 1569 GS17 50C1967 0.00149 )	( 1571 GS19 60C1967 0.00176 )	( 1572 GS20 60C1967 0.00270 )
( 1574 GS22 60C1967 0.01438 )	( 1575 GS28 60C1967 0.00129 )	( 1544 MU 1 20C1967 0.00238 )
( 1547 MS 1 20C1967 0.01597 )	( 1546 LU 1 20C1967 0.01501 )	( 1520 HO 1 18SE1967 0.02357 )
( 1521 SH 1 18SE1967 0.02308 )	( 1522 BH 1 18SE1967 0.00182 )	( 1525 PW 1 20SE1967 0.01393 )
( 1526 MO 1 20SE1967 0.00545 )	( 1531 GH 1 25SE1967 0.01691 )	( 1545 WL 1 20C1967 0.00676 )
( 1550 MR 1 50C1967 0.28497 )	( 1553 SG 1 60C1967 0.00734 )	( 1426 MS 2 29MY1967 0.04199 )
( 1427 LU 2 29MY1967 0.04843 )	( 1417 HO 2 22MY1967 0.00374 )	( 1350 BH 2 19AP1967 0.01762 )
( 1354 GH 2 25AP1967 0.00518 )	( 1404 MQ 2 10MY1967 0.05081 )	( 1407 SM 2 14MY1967 0.01194 )
( 1349 CI 2 19AP1967 0.00359 )	( 1406 GB 2 13MY1967 0.00539 )	

### Species *incertae sedis*

*Opephora* sp. #1.

605 OPSPECOA TOT NO OF STATIONS 4

( 46923 CH 22ND1546 0.00219 )	( 1285 F 1 15SE1964 0.00582 )	( 1565 GS13 50C1967 0.00507 )
( 1350 BH 2 19AP1967 0.00441 )		

*Opephora* sp. #2.

607 OPSPECQC TOT NO OF STATIONS 9

( 1565 GS13 50C1967 0.00507 )	( 1571 GS19 60C1967 0.00293 )	( 1573 GS21 60C1967 0.00112 )
( 1546 LU 1 20C1967 0.00500 )	( 1522 BH 1 18SE1967 0.00182 )	( 1545 WL 1 20C1967 0.00676 )
( 1550 MR 1 50C1967 0.28497 )	( 1553 SG 1 60C1967 0.00734 )	( 1350 BH 2 19AP1967 0.01194 )

Genus *Oestrupia* Heid.

Heiden ex Hustedt, Ber. Deutsch. Bot. Ges., 53(1):16. 1935.

Although the growth habit of the freshwater members of the genus *Oestrupia* is poorly known, the limited information available indicates that they are most often found in benthic communities. The entities known from Lake Michigan are rare in plankton collections and those noted usually come from nearshore localities.

*Oestrupia zachariasi* (Reich.) comb. nov.

*Navicula* (*Caloneis*) *zachariasi* Reichelt, Forshungsber. Biol. Sta. Plön, 14:199. 1903.

608 OZACHAR TGT NO OF STATIONS 3											
( 1565	GS13	50C1967	C.01014 )	( 1521	SH 1	18SE1967	0.00577 )	( 1545	HL 1	20C1967	C.04054 )

*Oestrupia zachariasi* var. *undulata* (Schulz) comb. nov.

*Caloneis baltica* var. *undulata* Schulz, Bot. Arch., 13:203, fig. 76. 1926.

609 OZACHVU TGT NO OF STATIONS 7											
(46915	CH	20FE1946	0.00569 )	( 1279	E 1	16SE1964	0.00393 )	( 1398	GS22	14MY1967	C.00304 )
( 1565	GS13	50C1967	0.01521 )	( 1574	GS22	60C1967	0.00288 )	( 1546	LU 1	20C1967	C.01000 )
( 1527	TR 1	20SE1967	0.00629 )	(							

Genus *Pinnularia* Ehr. nom. cons.

Ehrenberg, Ber. Akad. Wiss. Berlin, 1843:45. 1843.

Most species of the genus *Pinnularia* find their primary habitat in benthic communities. The rare representatives of the genus that are taken in plankton collections from Lake Michigan are undoubtedly derived from such communities within the lake or from sources outside the lake proper.

*Pinnularia abaujensis* (Pant.) Ross

*Navicula abaujensis* Pantocsek, Beitr. Foss. Bacill. Ungarns, Theil 2, p. 41, pl. 3, fig. 54. 1889.

*Pinnularia abaujensis* (Pant.) Ross, Natl. Mus. Canada Bull., 97(2):199, pl. 10, fig. 1. 1947.

Coll: 1800.

*Pinnularia abaujensis* var. *linearis* (Hust.) Patr.

*Pinnularia gibba* var. *linearis* Hustedt in: Pascher, Süßw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 327, fig. 604. 1930.

Coll: 1800.

*Pinnularia acrosphaeria* Wm. Smith

*Pinnularia acrosphaeria* Wm. Smith, Syn. British Diat., Vol. 1, p. 58, pl. 19, fig. 183. 1853.

Coll: 1818.

*Pinnularia biceps* Greg.

*Pinnularia biceps* Gregory, Quart. J. Micr. Sci., 4:8, pl. 1, fig. 28. 1856.

610 PIBICEPS TOT NO OF STATIONS 1  
( 1350 BH 2 19AP1967 0.00220 ) (

*Pinnularia biceps* fo. *petersenii* Ross

*Pinnularia interrupta* fo. *minor* Peterson, Bot. Iceland, Vol. 2, Pt. 2, p. 405, fig. 25. 1928.

*Pinnularia biceps* fo. *petersenii* Ross, Natl. Mus. Canada Bull., 97(2):201, pl. 9, fig. 11. 1947.

611 PIRICEFP TOT NO OF STATIONS 1  
( 1404 MQ 2 10MY1967 0.01270 ) (

*Pinnularia borealis* Ehr.

*Pinnularia borealis* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:420, pl. 1(2), fig. 6. 1843.

612 PIBCREAL TOT NO OF STATIONS 1  
( 1395 GS19 13MY1967 0.00117 ) (

*Pinnularia brebissonii* (Kütz.) Rabh.

*Navicula brebissonii* Kützling, Bacill., p. 93, pl. 3, fig. 49. 1844.

*Pinnularia brebissionii* (Kütz.) Rabenhorst, Fl. Europaea Alg., Sect. 1, p. 222. 1864.

613 PIBREBIS TOT NO OF STATIONS 5  
( 46920 CH 20DE1946 0.00031 ) ( 46516 CH 4MY1947 0.00034 ) ( 46764 EV 17JL1937 0.00806 )  
( 46759 EV 19MY1938 0.00338 ) ( 1423 WA 2 25MY1967 0.00428 ) (

*Pinnularia burkii* Patr.

*Pinnularia burkii* Patrick, Farlowia, 2(2):189, pl. 3, fig. 1. 1945.

614 PIBURKII TOT NO OF STATIONS 1  
( 1354 GH 2 25AP1967 0.00173 ) (

*Pinnularia globiceps* var. *krockii* (Grun.) Cleve

*Navicula krockii* Grunow in: Mojsisovics and Neumayer, Beitr. Paläontol. Österreich-Ungarns, Bd. 2, Heft 4, p. 155, pl. 30, fig. 40. 1882.

*Pinnularia globiceps* var. *krockii* (Grun.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 27(3):77. 1895.

615 PIGLCBVK TOT NO OF STATIONS 1  
( 1389 GS13 12MY1967 0.00258 ) (

*Pinnularia interrupta* var. *crassior* (Grun.) Cleve

*Navicula globiceps* var. *crassior* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):27, pl. 1, fig. 13. 1880.

*Pinnularia interrupta* var. *crassior* (Grun.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 27(3):76. 1895.

616 PIINTEVC TOT NO OF STATIONS 3  
( 1388 GS12 12MY1967 0.00603 ) ( 1389 GS13 12MY1967 0.00258 ) ( 1417 HQ 2 22MY1967 0.00374 )



*Pinnularia legumen* (Ehr.) Ehr.

*Navicula legumen* Ehrenberg, Ber. Akad. Wiss. Berlin, 1841:141. 1841.  
*Pinnularia legumen* (Ehr.) Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:301, pl. 4(1), fig. 7. 1843.

617	PILEGUME	TCT NO OF STATIONS	1
( 1404	MO 2	10MY1967	0.01270 ) (

*Pinnularia leptosoma* (Grun.) Cleve

*Navicula leptosoma* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 12, fig. 29. 1880.  
*Pinnularia leptosoma* (Grun.) Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 27(3):74. 1895.

618	PILEPTOS	TCT NC OF STATIONS	1
( 1550	MR 1	50C1967	0.02478 ) (

*Pinnularia major* (Kütz.) Rabh.

*Frustulia maior* Kützing, Linnaea, 8:547, pl. 14, fig. 25. 1833.  
*Navicula major* (Kütz.) Kützing, Bacill., p. 97, pl. 4, figs. 19-20. 1844.  
*Pinnularia major* (Kütz.) Rabenhorst, Süßw.-Diat., p. 42, pl. 6, fig. 5. 1853.

Coll: 1552.

*Pinnularia stomatophora* (Grun.) Cleve

*Navicula stomatophora* Grunow in: A. Schmidt, Atlas Diat., pl. 44, figs. 27-29. 1876.  
*Pinnularia stomatophora* (Grun.) Cleve, Acta Soc. Fauna Fl. Fennica, 8(2):27. 1891.

620	PISPECOC	TCT NO OF STATIONS	1
( 3541	CH	1FE1881	0.00578 ) (

*Pinnularia tibetana* Hust.

*Pinnularia tibetana* Hustedt in: Hedin, South. Tibet, Vol. 6, part 3 (Bot.) p. 129, pl. 9, figs. 3-5. 1922.

621	PISPECOD	TCT NO OF STATIONS	1
(46764	EV	17JL1937	0.01612 ) (

*Pinnularia undulata* Greg.

*Pinnularia undulata* Gregory, Quart. J. Micr. Sci., 2:97, pl. 4, fig. 10. 1854.

Coll: 862.

*Pinnularia viridis* (Nitz.) Ehr.

*Bacillaria viridis* Nitzsch, Neue Schrift. Naturf. Ges. Halle, 3(1):97, pl. 6, figs. 1-3. 1817.  
*Pinnularia viridis* (Nitz.) Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:305, pl. 1(1), fig. 7. 1843.

( 3541 CH 1FE1881 0.01956 ) ( 1390 GS14 12MY1967 C.00587 ) (

Genus *Rhizosolenia* Ehr.

Ehrenberg, Abh. Akad. Wiss. Berlin, 1841:134. 1843.

All known members of the genus *Rhizosolenia* are euplanktonic. Most of its members are marine, however the following species are found only in fresh water and are widely reported from the Great Lakes.

*Rhizosolenia eriensis* H. L. Smith

*Rhizosolenia eriensis* H. L. Smith, The Lens, 1:44. 1872.

Cells bacilliform with a single conspicuous spine at each end. Valves much reduced, appearing as a cap at the end of the cells. Cells elongated in the perivalvar axis and laterally compressed. Specimens from Lake Michigan 35-150 $\mu$  long, 10-25 $\mu$  broad in greatest diameter, only 2-4 $\mu$  in least diameter. Because of the construction of the frustule, specimens are almost always observed in girdle view. Intercalary bands numerous, constructed in the form of a split-ring with cuneate ends so that the ends of the "ring" overlap one side of its own opposite end and one side of the next successive intercalary band. The line of imbrication of the intercalary bands is in the median of the long axis of the cell and is quite conspicuous. The frustule is very lightly silicified and is usually destroyed by standard diatom cleaning procedures. In living cells the chromatophores occur near the center of the cell. The end spines are excentric and usually occur on opposite sides of the ends of the cells.

This species is common in plankton collections from Lake Michigan, usually reaching its maximum abundance in the late spring or early fall.

( 60973 CH 1876 0.87388 )	( 3541 CH 1FE1881 0.00978 )	( 46921 CH 23NO1945 C.00388 )
( 46908 CH DE1945 0.03021 )	( 46917 CH 12JA1946 0.04186 )	( 46915 CH 20FE1946 0.17641 )
( 46914 CH 15AP1946 0.00320 )	( 46924 CH 10MY1946 0.22927 )	( 46923 CH 22NO1946 C.01530 )
( 46920 CH 20CE1946 0.00031 )	( 46955 CH JA1947 0.01471 )	( 46909 CH MR1947 C.10018 )
( 46916 CH 4MY1947 0.35286 )	( 46956 CH MY1947 1.55304 )	( 46919 CH 5JN1947 C.27162 )
( 46907 CH JL1947 0.04586 )	( 46922 CH 21AU1947 0.00242 )	( 46758 EV 5JN1937 C.66329 )
( 46771 EV 11JN1937 4.65979 )	( 46743 EV 20JN1937 C.19697 )	( 46764 EV 17JL1937 C.12087 )
( 46757 EV 25JL1937 0.01444 )	( 46747 EV 1AU1937 0.01238 )	( 46763 EV 23AU1937 C.06088 )
( 46765 EV 30AU1937 0.02789 )	( 46760 EV 22SE1937 0.01970 )	( 46750 EV 24SE1937 C.04242 )
( 46744 EV 6OC1937 0.01463 )	( 46748 EV 13OC1937 0.04270 )	( 46767 EV 27OC1937 0.23984 )
( 46749 EV 12MR1938 0.18206 )	( 46768 EV 16MR1938 0.23519 )	( 46762 EV 18MR1938 0.19850 )
( 46751 EV 30MR1938 0.35730 )	( 46772 EV 18AP1938 0.11356 )	( 46756 EV 27AP1938 0.79923 )
( 46759 EV 19MY1938 1.60702 )	( 46761 EV 27MY1938 0.99204 )	( 46766 EV 14OE1938 C.09506 )
( 1224 B 4 18MY1964 0.00196 )	( 1225 C 6 15MY1964 0.01568 )	( 1226 C 7 16MY1964 C.04186 )
( 1227 C* 2 13MY1964 0.00219 )	( 1228 D 2 14MY1964 0.00584 )	( 1229 D 5 14MY1964 C.03595 )
( 1230 E 2 16MY1964 0.01185 )	( 1231 E 3 16MY1964 C.01712 )	( 1232 E 5 16MY1964 C.01044 )
( 1233 B 3 5JN2964 0.03096 )	( 1234 B 3 18JN1964 C.98403 )	( 1235 C 7 16JN1964 C.05649 )
( 1439 B 6 5JN1964 0.76923 )	( 1236 C* 1 8JN1964 0.00875 )	( 1237 C* 2 8JN1964 C.15077 )
( 1238 D 3 11JN1964 0.02800 )	( 1240 D 6 10JN1964 0.05215 )	( 1241 E 2 13JN1964 C.010350 )
( 1242 E 3 13JN1964 0.00749 )	( 1243 E 6 13JN1964 0.32156 )	( 1244 F 1 11JN1964 C.00439 )
( 1245 F 2 11JN1964 0.01729 )	( 1246 F 3 11JN1964 0.04183 )	( 1247 B 3 14JL1964 1.49400 )
( 1248 B 3 24JL1964 C.68968 )	( 1440 E 6 11JL1964 4.38516 )	( 1441 B 6 24JL1964 2.92958 )
( 1249 C 3 8JL1964 0.01358 )	( 1250 C 6 10JL1964 1.62795 )	( 1251 C 7 16JL1964 C.23466 )
( 1252 C* 1 16JL1964 0.53835 )	( 1253 C* 2 16JL1964 C.08673 )	( 1254 D 2 15JL1964 2.41333 )
( 1255 D 5 15JL1964 5.21020 )	( 1256 E 2 14JL1964 1.79527 )	( 1257 E 3 14JL1964 1.00490 )
( 1258 F 1 6JL1964 1.98221 )	( 1259 F 2 6JL1964 2.16906 )	( 1260 F 3 6JL1964 2.13916 )
( 1261 B 3 2AU1964 0.01766 )	( 1262 B 3 17AU1964 0.03780 )	( 1442 B 6 2AU1964 1.43296 )
( 1443 B 6 16AU1964 0.01581 )	( 1264 C* 1 10AU1964 0.07916 )	( 1265 C* 2 10AU1964 C.44710 )
( 1266 D 3 18AU1964 4.91090 )	( 1267 D 6 18AU1964 0.02810 )	( 1268 E 2 15AU1964 2.48933 )
( 1269 E 3 15AU1964 C.29600 )	( 1270 F 1 10AU1964 0.10619 )	( 1444 B 6 19SE1964 0.00606 )
( 1271 C 7 22SE1964 0.02611 )	( 1272 C* 1 10SE1964 0.00821 )	( 1273 C* 2 10SE1964 C.02688 )
( 1274 D 1 17SE1964 0.02815 )	( 1275 D 2 17SE1964 0.26450 )	( 1276 D 3 18SE1964 0.04470 )
( 1277 D 4 18SE1964 0.02479 )	( 1278 D 6 18SE1964 C.01153 )	( 1279 E 1 16SE1964 C.20811 )
( 1280 E 2 16SE1964 0.04085 )	( 1281 E 3 16SE1964 0.11380 )	( 1282 E 4 16SE1964 C.15512 )
( 1283 E 5 16SE1964 0.25745 )	( 1284 E 6 17SE1964 0.26372 )	( 1285 F 1 15SE1964 0.08736 )
( 1286 F 2 15SE1964 0.16419 )	( 1287 F 3 15SE1964 C.32026 )	( 1288 B 3 15OC1964 0.07619 )
( 1445 B 6 14OC1964 0.68493 )	( 1289 C 7 14CC1964 C.80032 )	( 1290 C* 1 16OC1964 C.03411 )
( 1291 C* 2 16OC1964 0.01468 )	( 1292 D 1 15OC1964 0.23852 )	( 1293 D 2 15OC1964 C.56127 )

( 1294	D 3	150C1964	0.57685 )	( 1295	D 4	150C1964	0.74920 )	( 1296	D 5	140C1964	0.60196 )
( 1297	D 6	140C1964	0.33319 )	( 1298	E 1	120C1964	0.10233 )	( 1299	E 2	120C1964	0.33930 )
( 1300	E 3	130C1964	0.70163 )	( 1301	E 4	130C1964	3.09105 )	( 1302	E 5	130C1964	1.70054 )
( 1303	E 6	130C1964	0.82279 )	( 1304	F 1	110C1964	0.14571 )	( 1305	F 2	110C1964	0.10178 )
( 1306	F 3	110C1964	0.04712 )	( 1307	B 6	NO1964	0.26699 )	( 1308	C 7	6NC1964	1.38386 )
( 1309	C* 1	10NO1964	1.12555 )	( 1310	C* 2	10NO1964	2.69841 )	( 1311	D 1	8NO1964	2.34766 )
( 1312	D 2	8NO1964	0.94366 )	( 1313	D 3	9NO1964	2.70270 )	( 1314	D 4	9NO1964	1.20575 )
( 1315	D 5	9NO1964	1.91083 )	( 1316	D 6	9NO1964	0.34376 )	( 1317	E 1	6NO1964	2.68055 )
( 1318	E 2	7NO1964	2.92982 )	( 1319	E 3	7NO1964	2.93247 )	( 1320	E 4	7NO1964	4.34333 )
( 1321	E 5	7NO1964	3.79876 )	( 1322	E 6	7NO1964	7.46492 )	( 1323	F 1	6NO1964	0.15052 )
( 1324	F 2	6NO1964	0.06289 )	( 1325	F 3	6NO1964	0.00252 )	( 1326	C 3	27JA1967	0.74134 )
( 1327	C 3	2MR1967	1.23459 )	( 1328	C 3	28MR1967	2.03628 )	( 1329	C 5	28MR1967	0.37102 )
( 1330	C 7	28MR1967	0.61082 )	( 1331	A 3	19AP1967	0.27771 )	( 1332	A 4	19AP1967	1.38957 )
( 1333	A 6	19AP1967	0.02848 )	( 1334	C 3	25AP1967	0.21011 )	( 1335	C 5	25AP1967	3.68399 )
( 1336	C 7	21AP1967	0.56080 )	( 1337	E 2	23AP1967	0.83570 )	( 1338	E 5	23AP1967	0.62371 )
( 1339	A 3	4MY1967	0.00628 )	( 1340	A 4	4MY1967	0.01491 )	( 1341	E 2	7MY1967	0.05380 )
( 1342	E 3	7MY1967	0.00241 )	( 1343	E 5	6MY1967	0.01405 )	( 1344	A 3	23MY1967	0.00447 )
( 1409	A 4	23MY1967	0.00298 )	( 1410	A 6	24MY1967	0.00564 )	( 1411	C 3	31MY1967	0.00410 )
( 1412	C 5	31MY1967	0.00842 )	( 1413	C 7	25MY1967	0.00316 )	( 1414	E 2	28MY1967	0.01008 )
( 1415	E 3	28MY1967	0.00450 )	( 1416	E 5	28MY1967	0.00875 )	( 1417	A 3	12JN1967	0.03605 )
( 1432	A 4	13JN1967	0.03576 )	( 1433	C 3	17JN1967	0.56840 )	( 1434	C 5	17JN1967	0.03888 )
( 1435	C 7	13JN1967	0.01575 )	( 1436	E 2	15JN1967	0.01447 )	( 1437	E 3	15JN1967	0.01615 )
( 1438	E 5	14JN1967	0.01089 )	( 1439	A 3	11JL1967	1.02735 )	( 1440	A 4	11JL1967	3.76591 )
( 1441	C 3	16JL1967	3.74485 )	( 1442	C 5	16JL1967	2.13272 )	( 1443	C 7	16JL1967	0.59840 )
( 1452	E 2	14JL1967	0.96862 )	( 1453	E 3	15JL1967	1.41546 )	( 1454	E 5	15JL1967	1.82036 )
( 1502	A 4	28AU1967	0.00515 )	( 1503	C 5	25E1967	0.20692 )	( 1504	C 7	29AU1967	0.00948 )
( 1511	E 2	15E1967	2.57851 )	( 1512	E 3	15E1967	0.46725 )	( 1513	E 5	31AU1967	0.04561 )
( 1532	A 3	18SE1967	0.00329 )	( 1533	E 2	24SE1967	0.52626 )	( 1534	E 3	24SE1967	0.13801 )
( 1541	E 2	11OC1967	0.02661 )	( 1542	E 3	11OC1967	0.16273 )	( 1543	E 5	10CC1967	0.01437 )
( 1380	GS 4	9MY1967	0.00168 )	( 1381	GS 5	10MY1967	0.01193 )	( 1382	GS 8	10MY1967	0.00185 )
( 1385	GS 9	10MY1967	0.00471 )	( 1386	GS10	12MY1967	0.00575 )	( 1387	GS11	12MY1967	0.01584 )
( 1388	GS12	12MY1967	0.00603 )	( 1389	GS13	12MY1967	0.00258 )	( 1390	GS14	12MY1967	0.01174 )
( 1392	GS16	12MY1967	0.00308 )	( 1393	GS17	13MY1967	0.00274 )	( 1394	GS18	13MY1967	0.00860 )
( 1395	GS19	13MY1967	0.00235 )	( 1396	GS22	14MY1967	0.01214 )	( 1397	GS 1	30C1967	0.31310 )
( 1555	GS 2	30C1967	0.44845 )	( 1556	GS 4	30C1967	0.02616 )	( 1557	GS 5	40C1967	0.00396 )
( 1560	GS 8	40C1967	0.02834 )	( 1561	GS 9	40C1967	0.00587 )	( 1562	GS10	50C1967	0.02220 )
( 1563	GS11	50C1967	0.00935 )	( 1564	GS13	50C1967	0.01521 )	( 1565	GS14	50C1967	0.00367 )
( 1568	GS16	50C1967	0.01010 )	( 1569	GS21	60C1967	0.00112 )	( 1570	PU 1	20C1967	0.00238 )
( 1546	LU 1	20C1967	0.00500 )	( 1527	TR 1	20SE1967	0.00629 )	( 1528	SB 1	20SE1967	0.01444 )
( 1529	KW 1	20SE1967	0.01199 )	( 1530	FR 1	24SE1967	0.01000 )	( 1548	CA 1	30C1967	0.01272 )
( 1549	MQ 1	40C1967	0.01370 )	( 1551	ES 1	50C1967	0.05592 )	( 1552	SM 1	60C1967	0.01981 )
( 1553	SG 1	60C1967	0.02938 )	( 1351	MI 2	21AP1967	0.17688 )	( 1427	LU 2	29MY1967	0.03632 )
( 1399	PW 2	5MY1967	0.01360 )	( 1402	TR 2	6MY1967	0.01624 )	( 1400	SB 2	6MY1967	0.01191 )
( 1352	KW 2	21AP1967	0.18897 )	( 1354	GH 2	25AP1967	0.01726 )	( 1403	CA 2	10MY1967	0.01308 )
( 1405	ES 2	12MY1967	0.03870 )	( 1349	CI 2	19AP1967	0.01437 )	( 1419	BU 2	23MY1967	0.03662 )
( 1421	CH 2	23MY1967	0.01735 )	( 1423	WA 2	25MY1967	0.00856 )	( 1424	KN 2	25MY1967	0.01332 )

# *Rhizosolenia gracilis* H. L. Smith

*Rhizosolenia gracilis* H. L. Smith, Proc. Amer. Soc. Micr., 5:177, pl. 1, fig. 1b. 1882.

Cells bacilliform with a single conspicuous spine at each end. Valves much reduced, appearing as a cap at the ends of the cells. Cells elongate in the pervalvar axis and laterally compressed. Specimens from Lake Michigan 55-250μ long, 4-12μ broad at the greatest diameter, only 2-4μ broad at the least diameter. Intercalary bands numerous, similar in structure to a flattened split-ring. Frustules very lightly silicified, structure of the intercalary bands and imbrication line poorly visible. The terminal spines are only slightly excentric and are very long and fine.

This species is occasionally taken in plankton collections from Lake Michigan, most usually in regions that have undergone some degree of eutrophication. It is extremely variable in structure, and malformed specimens are common. This species is usually destroyed in diatom cleaning procedures and is easily overlooked in living material due to its delicate structure.

## 623. RHIZOSOLENIA GRACILIS H. L. SMITH

( 60973	CH	1876	0.28342 )	( 46524	CH	10MY1946	0.00564 )	( 46909	CH	MR1947	0.00455 )
( 46916	CH	4MY1947	0.00170 )	( 46906	CH	MY1947	0.43140 )	( 46907	CH	JL1947	0.00049 )
( 46771	EV	11JN1937	1.15823 )	( 46747	EV	1AU1937	0.00495 )	( 46750	EV	24SE1937	0.00471 )
( 46767	EV	27CC1937	0.01547 )	( 46772	EV	18AP1938	0.01419 )	( 46756	EV	27AP1938	0.03526 )
( 46755	EV	19MY1938	0.00338 )	( 46761	EV	27MY1938	0.07631 )	( 1439	B 6	5JN1964	0.65930 )
( 1440	B 6	11JL1964	2.83745 )	( 1441	B 6	24JL1964	0.30838 )	( 1250	C 6	10JL1964	0.56197 )
( 1251	C 7	16JL1964	0.01738 )	( 1252	C* 1	16JL1964	0.01395 )	( 1253	C* 2	16JL1964	0.01369 )
( 1254	D 2	15JL1964	0.32178 )	( 1255	D 5	15JL1964	1.61696 )	( 1256	E 2	14JL1964	0.18136 )
( 1257	E 3	14JL1964	0.83742 )	( 1258	F 1	6JL1964	0.00472 )	( 1259	F 2	6JL1964	0.12705 )
( 1260	F 3	6JL1964	0.09359 )	( 1442	B 6	2AU1964	0.01706 )	( 1265	C* 2	10AU1964	0.01341 )
( 1268	E 2	15AU1964	0.00821 )	( 1269	E 3	15AU1964	0.01370 )	( 1273	C* 2	10SE1964	0.01613 )
( 1281	E 3	16SE1964	0.00785 )	( 1282	E 4	16SE1964	0.01108 )	( 1283	E 5	16SE1964	0.04291 )
( 1285	F 1	15SE1964	0.01165 )	( 1288	B 3	15OC1964	0.00435 )	( 1445	B 6	14OC1964	0.00978 )
( 1289	C 7	14OC1964	0.02199 )	( 1293	D 2	15OC1964	0.00943 )	( 1294	D 3	15OC1964	0.01319 )
( 1295	D 4	15OC1964	0.02378 )	( 1296	D 5	14OC1964	0.02754 )	( 1297	D 6	14OC1964	0.00571 )

( 1298	E 1	120C1964	0.00269 )	( 1299	E 2	120C1964	0.01257 )	( 1300	E 3	130C1964	C.00716 )
( 1301	E 4	130C1964	0.00883 )	( 1303	E 6	130C1964	0.00560 )	( 1304	F 1	110C1964	C.00494 )
( 1305	F 2	110C1964	0.00173 )	( 1307	B 6	N01964	C.01082 )	( 1308	C 7	6N01964	C.02129 )
( 1309	C* 1	10N01964	0.02251 )	( 1310	C* 2	10N01964	C.03401 )	( 1311	D 1	6N01964	C.09287 )
( 1312	D 2	8N01964	0.02794 )	( 1313	D 3	9N01964	C.10618 )	( 1314	D 4	9N01964	0.05742 )
( 1315	D 5	9N01964	C.02275 )	( 1316	D 6	9N01964	C.00756 )	( 1317	E 1	6N01964	C.15530 )
( 1318	E 2	7N01964	0.02854 )	( 1319	E 3	7N01964	C.02095 )	( 1320	E 4	7N01964	C.00827 )
( 1321	E 5	7N01964	C.00638 )	( 1322	E 6	7N01964	C.00333 )	( 1323	F 1	6N01964	C.00557 )
( 1336	C 3	27JA1967	0.00193 )	( 1337	C 3	2MR1967	0.01911 )	( 1339	C 5	2MR1967	C.00624 )
( 1340	C 7	28MR1967	0.00654 )	( 1341	A 3	19AP1967	C.01410 )	( 1342	A 4	19AP1967	0.31581 )
( 1343	A 6	19AP1967	0.02640 )	( 1344	C 2	25AP1967	0.01158 )	( 1345	C 5	25AP1967	C.12475 )
( 1346	C 7	21AP1967	C.15885 )	( 1347	E 2	23AP1967	C.02764 )	( 1348	E 5	23AP1967	C.05596 )
( 1368	A 3	4MY1967	0.00628 )	( 1370	A 6	3MY1967	0.00230 )	( 1374	E 2	7MY1967	0.02690 )
( 1376	E 5	6MY1967	C.00562 )	( 1411	C 3	31MY1967	0.00410 )	( 1414	E 2	28MY1967	C.00336 )
( 1416	E 5	28MY1967	0.00219 )	( 1431	A 3	12JN1967	0.04635 )	( 1432	A 4	13JN1967	0.02044 )
( 1433	C 3	17JN1967	0.32296 )	( 1434	C 5	17JN1967	0.00598 )	( 1435	C 7	13JN1967	C.01894 )
( 1446	A 3	11JL1967	0.85612 )	( 1447	A 4	11JL1967	0.65494 )	( 1449	C 3	16JL1967	1.60495 )
( 1450	C 5	16JL1967	1.33295 )	( 1451	C 7	16JL1967	0.08267 )	( 1452	E 2	14JL1967	C.16605 )
( 1453	E 3	15JL1967	0.25782 )	( 1454	E 5	15JL1967	0.16603 )	( 1511	E 2	15E1967	C.00614 )
( 1512	E 3	15E1967	0.02749 )	( 1538	E 5	23SE1967	0.00552 )	( 1381	GS 5	10MY1967	C.00239 )
( 1383	GS 7	10MY1967	0.00267 )	( 1386	GS10	12MY1967	0.00287 )	( 1387	GS11	12MY1967	C.00792 )
( 1392	GS16	12MY1967	0.00308 )	( 1395	GS19	13MY1967	0.00117 )	( 1398	GS22	14MY1967	C.00911 )
( 1556	GS 3	30C1967	0.00521 )	( 1547	MS 1	2CC1967	0.00798 )	( 1351	MI 2	21AP1967	C.11171 )
( 1399	PM 2	5MY1967	0.01360 )	( 1400	SB 2	6MY1967	C.00596 )	( 1352	KW 2	21AP1967	C.03436 )
( 1353	FR 2	23AP1967	0.01055 )	( 1403	CA 2	10MY1967	0.01308 )	( 1407	SM 2	14MY1967	C.00597 )
( 1419	BU 2	23MY1967	0.01831 )	( 1423	WA 2	25MY1967	C.00428 )	( 1424	KN 2	25MY1967	C.01332 )

### Genus *Rhoicosphenia* Grun.

Grunow, Verh. Zool.-Bot. Ges. Wien, 10:511. 1860.

Members of the genus *Rhoicosphenia* find their primary habitat in periphyton communities. Occasional specimens are taken in plankton collections from Lake Michigan, particularly in nearshore areas.

*Rhoicosphenia curvata* (Kütz.) Grun.

*Gomphonema curvatum* Kützling, Linnaea, 8:567, pl. 16, fig. 51. 1833.

*Rhoicosphenia curvata* (Kütz.) Grunow ex Rabenhorst, Fl. Europaea Alg., p. 112. 1864.

624 RHOICURVAI TCT NO OF STATIONS 64

( 3541	CH	1FE1881	0.00578 )	( 46517	CH	12JA1946	0.00028 )	( 46923	CH	22NO1946	C.00219 )
( 46920	CH	20DE1946	0.00062 )	( 46522	CH	21AU1947	0.00097 )	( 46764	EV	17JL1937	C.00806 )
( 46747	EV	1AU1937	0.01485 )	( 46763	EV	23AU1937	1.56250 )	( 46752	EV	15SE1937	C.26121 )
( 46750	EV	24SE1937	0.00943 )	( 46748	EV	130C1937	C.17079 )	( 46767	EV	27OC1937	C.01547 )
( 46749	EV	12MR1938	0.01214 )	( 46768	EV	16MR1938	C.01470 )	( 46762	EV	18MR1938	C.02206 )
( 46751	EV	30MR1938	0.01117 )	( 1272	C* 1	10SE1964	0.00821 )	( 1285	F 1	15SE1964	C.00582 )
( 1341	A 3	19AP1967	0.00108 )	( 1342	A 4	19AP1967	0.00180 )	( 1343	A 6	19AP1967	C.00069 )
( 1504	A 3	28AU1967	0.00247 )	( 1536	E 2	24SE1967	0.00273 )	( 1538	E 5	23SE1967	C.02210 )
( 1388	GS12	12MY1967	0.00603 )	( 1557	GS 4	30C1967	0.00374 )	( 1561	GS 9	40C1967	C.00587 )
( 1567	GS15	50C1967	0.00476 )	( 1569	GS17	50C1967	C.00297 )	( 1575	GS28	60C1967	C.00387 )
( 1524	MI 1	2CSE1967	2.03590 )	( 1546	LU 1	2GC1967	C.03001 )	( 1520	HO 1	18SE1967	0.05658 )
( 1521	SH 1	18SE1967	0.06347 )	( 1522	BH 1	18SE1967	0.00912 )	( 1523	RA 1	15SE1967	C.18450 )
( 1525	PW 1	20SE1967	0.08355 )	( 1526	MO 1	20SE1967	0.81356 )	( 1527	TR 1	20SE1967	C.08176 )
( 1528	SB 1	2CSE1967	0.23101 )	( 1529	KW 1	20SE1967	0.62358 )	( 1530	FR 1	24SE1967	C.02000 )
( 1531	GH 1	25SE1967	0.10989 )	( 1545	WL 1	20C1967	0.10812 )	( 1548	CA 1	30C1967	C.05088 )
( 1549	MO 1	40C1967	0.01370 )	( 1552	SM 1	60C1967	C.00660 )	( 1550	MR 1	5CC1967	C.01239 )
( 1553	SG 1	6CC1967	0.01469 )	( 1428	MU 2	29MY1967	0.00603 )	( 1426	MS 2	29MY1967	0.03150 )
( 1351	MI 2	21AP1967	0.00310 )	( 1427	LU 2	29MY1967	0.03632 )	( 1417	HC 2	22MY1967	C.00374 )
( 1350	BH 2	19AP1967	0.03524 )	( 1399	PW 2	5MY1967	0.00680 )	( 1401	MO 2	6MY1967	C.01176 )
( 1402	TR 2	6MY1967	0.01624 )	( 1400	SB 2	6MY1967	0.07148 )	( 1352	KW 2	21AP1967	C.00859 )
( 1354	GH 2	25AP1967	0.00173 )	( 1429	WL 2	29MY1967	C.01062 )	( 1403	CA 2	10MY1967	C.01308 )
( 1423	WA 2	25MY1967	0.00428 )								

*Rhoicosphenia curvata* var. *subacuta* M. Schmidt

*Rhoicosphenia curvata* var. *subacuta* M. Schmidt in: A. Schmidt, Atlas Diat., pl. 213, figs. 6-7. 1899.

625 RHOICURVVS TCT AC CF STATIONS 1

( 1544	MU 1	20C1967	0.00238 )	(
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Genus *Rhopalodia* O. Müll.  
O. Müller, Bot. Jahrb., 22:55. 1895.

Members of the genus *Rhopalodia* are adapted to epiphytic growth on aquatic vascular plants and the coarser species of algae. Occasional specimens are noted in plankton collections from Lake Michigan, particularly those from nearshore areas.

*Rhopalodia gibba* (Ehr.) O. Müll.

*Navicula gibba* Ehrenberg, Infusionsthierchen, p. 184, pl. 13, fig. 19. 1838.  
*Rhopalodia gibba* (Ehr.) O. Müller, Bot. Jahrb., 22:65, pl. 1, figs. 15-17. 1897.

626 RPGIBBA TCT NO OF STATIONS 5

( 60973 )	CH	1876	0.02362 )	( 1285 )	F 1	15SE1964	0.02912 )	( 1379 )	GS 3	9MY1967	C.00309 )
( 1531 )	GH 1	25SE1967	0.00845 )	( 1553 )	SG 1	6GC1967	0.00734 )	( )			

*Rhopalodia gibba* var. *ventricosa* (Kütz.) V. H.

*Epithemia ventricosa* Kütz., Bacill., p. 25, pl. 3, fig. 9. 1844.  
*Rhopalodia gibba* var. *ventricosa* (Kütz.) Van Heurck, Treat. Diat., p. 296. 1896.

628 RPGIBBVV TOT NO OF STATIONS 1

( 1284 )	E 6	17SE1964	0.00318 )	( )
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*Rhopalodia gibberula* (Ehr.) O. Müll.

*Eunotia gibberula* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:126, pl. 3(4), fig. 8. 1843.

627 RPGIBBAR TCT NO OF STATIONS 1

( 1350 )	BH 2	15AP1967	0.00220 )	( )
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Genus *Stauroneis* Ehr.

Ehrenberg, Ber. Akad. Wiss. Berlin, 1843:45. 1843.

Most members of the genus *Stauroneis* find their primary habitat in benthic communities. Certain species that are abundant in epipelagic populations are rather commonly found in plankton collections from Lake Michigan but always in very low numbers.

*Stauroneis acutiuscula* Per. and Hérib.

*Stauroneis acutiuscula* Peragallo and Héribaud in: Héribaud, Diat. Auvergne, p. 78, pl. 3, fig. 20. 1893.

629 SAACUITI TOT NO OF STATIONS 5

( 1565 )	GS13	50C1967	0.01521 )	( 1569 )	GS17	50C1967	0.00149 )	( 1546 )	LU 1	20C1967	C.00500 )
( 1530 )	FR 1	24SE1967	0.01000 )	( 1545 )	WL 1	20C1967	0.02027 )	( )			

*Stauroneis anceps* Ehr.

*Stauroneis anceps* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:422, pl. 2(1), fig. 18. 1843.

630 SAANCEPS TCT NO OF STATIONS 6

( 46747 )	EV	1AU1937	0.00743 )	( 46750 )	EV	24SE1937	0.00471 )	( 1352 )	GS16	12MY1967	C.00308 )
( 1530 )	FR 1	24SE1967	0.01000 )	( 1350 )	BH 2	19AP1967	0.00220 )	( 1402 )	TR 2	6MY1967	C.00541 )

*Stauroneis anceps* fo. *gracilis* Rabh.

*Stauroneis anceps* fo. *gracilis* Rabenhorst, Fl. Europaea Alg., sect. 1, p. 247. 1864.

631 SAANCEVH TCT NO OF STATIONS 1

( 1406 )	GB 2	13MY1967	0.00270 )	( )
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*Stauroneis anceps* var. *siberica* Grun.

*Stauroneis anceps* var. *siberica* Grunow in: Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):48, pl. 3, fig. 65. 1880.

632 SAANCEVS TCT NO OF STATIONS 5											
(46922	CH	21AUI947	0.00048 )	(46764	EV	17JUL1937	0.01612 )	(46763	EV	23AUI937	C.02029 )
( 1575	GS28	60C1967	0.00129 )	( 1405	ES 2	12MY1967	0.00645 )	(			

*Stauroneis dilatata* Ehr.

*Stauroneis dilatata* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:134, pl. 1(2), fig. 12. 1843.

634 SADILATA TCT NO OF STATIONS 4											
(46764	EV	17JUL1937	0.03223 )	(46757	EV	25JUL1937	0.02889 )	(46747	EV	1AUI937	C.00495 )
(46763	EV	23AUI937	0.02029 )	(							

*Stauroneis nobilis* var. *baconiana* (Stodd.) Reim.

*Stauroneis baconiana* Stoddard, Proc. Boston Soc. Nat. Hist., 7:26. 1859.

*Stauroneis nobilis* var. *baconiana* (Stodd.) Reimer, Proc. Acad. Nat. Sci. Philadelphia, 113:204, pl. 2, fig. 1. 1961.

633 SANOBIVB TCT NO OF STATIONS 1											
( 1388	GS12	12MY1967	0.00603 )	(							

*Stauroneis phoenicenteron* (Nitz.) Ehr.

*Bacillaria phoenicenteron* Nitzsch, (pro parte), Neue Schrift. Naturf. Ges. Halle, 3(1):92, pl. 4, figs. 12, 14 (non figs. 1-11, 13, 15-22). 1817.

*Stauroneis phoenicenteron* (Nitz.) Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:387, pl. 2(5), fig. 1. 1843.

635 SAPHENI TCT NO OF STATIONS 1											
( 1390	GS14	12MY1967	0.00587 )	(							

*Stauroneis phoenicenteron* var. *brevis* Dippel

*Stauroneis phoenicenteron* var. *brevis* Dippel, Diat. Rhein-Mainebene, p. 82, fig. 176. 1904.

637 SASPECCA TCT NO OF STATIONS 1											
( 1404	MC 2	10MY1967	C.C1270 )	(							

*Stauroneis smithii* Grun.

*Stauroneis smithii* Grunow, Verh. Zool.-Bot. Ges. Wien, 10:564, pl. 6, fig. 16. 1860.

636 SASMITHI TCT NO OF STATIONS 6											
( 1389	GS13	12MY1967	0.00258 )	( 1565	GS13	50C1967	0.02028 )	( 1549	MQ 1	40C1567	C.C1370 )
( 1550	MR 1	50C1967	0.01239 )	( 1350	BH 2	19AP1967	0.00220 )	( 1404	MQ 2	10MY1967	0.01270 )

Genus *Stephanodiscus* Ehr.

Ehrenberg, Ber. Akad. Wiss. Berlin, 1845:80. 1845.

*Stephanodiscus alpinus* Hust. ex Huber-Pestalozzi

*Stephanodiscus alpinus* Hust. ex Huber-Pestalozzi, Die Binnengewässer, Band 16, Teil 2, Hälfte 2, p. 412, pl. 122, fig. 508. 1942.

Cells circular in valve view and rectangular in girdle view. Vegetative cells always occur singly. Valves of specimens from Lake Michigan 7-33 $\mu$  in diameter with slightly concave centers. Radial striae usually in biseriate fascicles near the margin, becoming single near the center of the valve, more rarely single throughout or becoming triseriate near the margins. Puncta in radial striae small but distinct, 18-22 in 10 $\mu$ . Fascicles are rather widely separated by conspicuous, thickened ribs. The marginal spines occur at the ends of the ribs, between the fascicles. Usually a spine is present at the end of each rib but occasionally, especially in the small individuals, spines may be irregular or lacking. Fascicles and spines 7-10 in 10 $\mu$  at the margin of the valves.

Although this species has only recently been reported from Lake Michigan (Stoermer 1967), specimens included in our concept of the taxon are present both in modern samples and in samples dating back to 1876. Previous reports probably refer this species to *Stephanodiscus astraea* (Ehr.) Grun. or *S. astraea* var. *minutula* (Kütz.) Grun. Huber-Pestalozzi (1942) reports this entity is abundant in the hypolimnion of alpine lakes.

638 STALPINU TCT NC OF STATICS 256

( 160973 )	CH	1876	0.45598 )	( 3540 )	CH	11MY1875	0.29819 )	( 3541 )	CH	1FE1881	C.7C425 )
( 3507 )	CH	19FE1881	0.30564 )	( 46510 )	CH	0C1945	0.00109 )	( 46921 )	CH	23NG1945	C.00323 )
( 46517 )	CH	12JA1546	0.00582 )	( 46515 )	CH	20FE1946	0.03414 )	( 46914 )	CH	19AP1946	C.23064 )
( 46924 )	CH	10MY1546	0.01058 )	( 46523 )	CH	22NO1946	0.00437 )	( 46920 )	CH	20DE1946	C.00647 )
( 46905 )	CH	JA1947	0.00490 )	( 46509 )	CH	MR1547	0.59196 )	( 46912 )	CH	AP1947	C.03449 )
( 46916 )	CH	4MY1547	0.00611 )	( 46506 )	CH	MY1947	0.01726 )	( 46919 )	CH	5JN1947	C.00910 )
( 46907 )	CH	JL1547	0.32052 )	( 46522 )	CH	21AU1947	0.04362 )	( 46771 )	EV	11JN1937	C.01902 )
( 46743 )	EV	20JN1937	0.01285 )	( 46764 )	EV	17JL1937	0.01612 )	( 46757 )	EV	25JL1937	C.00481 )
( 46763 )	EV	23AU1537	0.02029 )	( 46756 )	EV	27AP1538	0.00336 )	( 46759 )	EV	15MY1538	C.00675 )
( 1224 )	B 4	18MY1964	0.00392 )	( 1228 )	B 2	14MY1964	0.00389 )	( 1229 )	B 5	14MY1964	C.00806 )
( 1231 )	E 3	16MY1964	0.03669 )	( 1232 )	E 5	16MY1964	0.04174 )	( 1233 )	B 3	5JN2964	C.00714 )
( 1234 )	B 3	18JN1964	0.01406 )	( 1235 )	C 7	16JN1964	0.00282 )	( 1236 )	C* 1	8JN1964	C.00525 )
( 1237 )	C* 2	8JN1964	0.01031 )	( 1238 )	D 3	11JN1964	0.01200 )	( 1239 )	C 4	11JN1964	C.00348 )
( 1240 )	D 6	10JN1964	0.02148 )	( 1241 )	E 2	13JN1964	0.06653 )	( 1242 )	E 3	13JN1964	C.00450 )
( 1243 )	E 6	13JN1964	0.01044 )	( 1244 )	F 1	11JN1964	0.02741 )	( 1245 )	F 2	11JN1964	C.12102 )
( 1246 )	F 3	11JN1964	0.06574 )	( 1247 )	B 3	14JL1964	0.00854 )	( 1248 )	B 6	11JL1964	C.07370 )
( 1441 )	B 6	24JL1964	0.02423 )	( 1250 )	C 6	10JL1964	0.01233 )	( 1252 )	C* 1	16JL1964	C.01116 )
( 1253 )	C* 2	16JL1964	0.06162 )	( 1254 )	D 2	15JL1964	0.20686 )	( 1255 )	D 5	15JL1964	C.00543 )
( 1256 )	E 2	14JL1964	0.06995 )	( 1257 )	E 3	14JL1964	0.07417 )	( 1258 )	F 1	6JL1964	C.05191 )
( 1259 )	F 2	6JL1964	0.06817 )	( 1260 )	F 3	6JL1964	0.01719 )	( 1261 )	B 3	2AU1564	C.00785 )
( 1262 )	B 3	17AU1564	0.01050 )	( 1442 )	B 6	2AU1564	0.00341 )	( 1263 )	C 7	15AU1564	C.00400 )
( 1264 )	C* 1	10AU1564	0.00575 )	( 1266 )	D 3	18AU1564	0.04911 )	( 1268 )	E 2	15AU1564	C.01723 )
( 1269 )	E 3	15AU1564	0.17267 )	( 1270 )	F 1	10AU1564	0.01634 )	( 1271 )	C 7	22SE1564	C.01306 )
( 1272 )	C* 1	10SE1564	0.00410 )	( 1275 )	D 2	17SE1564	0.00645 )	( 1278 )	D 6	18SE1564	C.00769 )
( 1279 )	E 1	16SE1564	0.01571 )	( 1280 )	E 2	16SE1564	0.00681 )	( 1281 )	E 3	16SE1564	C.00392 )
( 1283 )	E 5	16SE1564	0.01226 )	( 1284 )	E 6	17SE1564	0.00635 )	( 1285 )	F 1	15SE1564	C.02912 )
( 1286 )	F 2	15SE1564	0.02189 )	( 1287 )	F 3	15SE1564	0.03002 )	( 1445 )	B 6	14CC1564	C.01305 )
( 1289 )	C 7	14CC1564	0.00879 )	( 1292 )	C 1	15CC1564	0.00373 )	( 1293 )	D 2	15CC1564	C.00472 )
( 1294 )	D 3	15CC1564	0.00659 )	( 1296 )	C 5	14CC1564	0.01574 )	( 1298 )	E 1	12CC1564	C.00539 )
( 1299 )	E 2	12CC1564	0.00942 )	( 1300 )	E 3	13CC1564	0.04654 )	( 1301 )	E 4	13CC1564	C.00883 )
( 1302 )	E 5	13CC1564	0.08503 )	( 1303 )	E 6	13CC1564	0.00560 )	( 1304 )	F 1	11CC1564	C.00741 )
( 1305 )	F 2	11CC1564	0.00345 )	( 1306 )	F 3	11CC1564	0.00554 )	( 1308 )	C 7	6NC1564	C.01217 )
( 1309 )	C* 1	10NC1564	0.00161 )	( 1310 )	C* 2	10NC1564	0.00227 )	( 1312 )	D 2	8NC1564	C.00310 )
( 1313 )	D 4	9NC1564	0.00286 )	( 1314 )	D 4	9NC1564	0.00861 )	( 1315 )	C 5	9NC1564	C.00510 )
( 1316 )	D 6	9NC1564	0.00378 )	( 1317 )	E 1	6NC1564	0.00766 )	( 1318 )	E 2	7NC1564	0.01332 )
( 1319 )	E 3	7NC1564	0.00785 )	( 1320 )	E 4	7NC1564	0.01861 )	( 1321 )	E 5	7NC1564	C.00558 )
( 1322 )	E 6	7NC1564	0.00333 )	( 1323 )	F 1	6NC1564	0.00279 )	( 1325 )	F 3	6NC1564	C.00504 )
( 1326 )	C 3	27JA1567	0.00578 )	( 1327 )	C 3	2MR1567	0.00588 )	( 1328 )	C 3	2MR1567	C.01190 )
( 1339 )	C 5	26MR1567	0.05300 )	( 1340 )	C 7	28MR1567	0.00509 )	( 1341 )	A 3	19AP1967	C.00759 )
( 1342 )	A 6	19AP1967	0.00625 )	( 1345 )	C 5	25AP1967	0.00585 )	( 1346 )	C 7	21AP1967	C.00401 )
( 1347 )	E 2	23AP1967	0.00163 )	( 1348 )	E 5	23AP1967	0.01234 )	( 1369 )	A 4	4MY1967	C.00745 )
( 1370 )	A 6	3MY1967	0.01611 )	( 1371 )	C 3	4PY1967	0.00462 )	( 1372 )	C 5	5MY1967	C.02837 )
( 1374 )	E 2	7MY1967	0.00598 )	( 1375 )	E 3	7MY1967	0.01684 )	( 1376 )	E 5	6MY1967	C.00843 )
( 1409 )	A 4	23MY1967	0.00893 )	( 1410 )	A 6	24MY1967	0.01128 )	( 1411 )	C 3	31MY1967	C.02051 )
( 1414 )	E 2	28MY1967	0.00336 )	( 1416 )	E 5	28MY1967	0.00656 )	( 1432 )	A 4	13JN1967	C.00255 )
( 1433 )	C 3	17JN1967	0.00646 )	( 1434 )	C 5	17JN1967	0.01196 )	( 1435 )	C 7	13JN1967	C.02210 )
( 1436 )	E 2	15JN1967	0.00724 )	( 1438 )	E 5	14JN1967	0.00363 )	( 1446 )	A 3	11JL1967	C.00245 )
( 1449 )	C 3	16JL1967	0.00764 )	( 1450 )	C 5	16JL1967	0.00571 )	( 1451 )	C 7	16JL1967	C.00197 )
( 1452 )	E 2	14JL1967	0.00639 )	( 1453 )	E 3	15JL1967	0.01011 )	( 1454 )	E 5	15JL1967	C.01200 )
( 1504 )	A 3	28AU1967	0.00988 )	( 1509 )	C 5	2SE1967	0.01009 )	( 1511 )	E 2	1SE1967	C.01842 )
( 1512 )	E 3	1SE1967	0.01571 )	( 1532 )	A 3	18SE1967	0.00986 )	( 1533 )	A 4	19SE1967	C.00464 )
( 1534 )	A 6	19SE1967	0.00310 )	( 1535 )	C 7	20SE1967	0.00322 )	( 1536 )	E 2	24SE1967	C.01636 )
( 1537 )	E 3	24SE1967	0.00826 )	( 1538 )	E 5	23SE1967	0.02762 )	( 1539 )	C 3	40C1967	C.01510 )
( 1540 )	C 5	4CC1967	0.00993 )	( 1541 )	E 2	110C1967	0.04790 )	( 1542 )	E 3	110C1967	C.02038 )
( 1543 )	E 5	10CC1967	0.01437 )	( 1377 )	GS 1	9MY1967	0.01583 )	( 1378 )	GS 2	9MY1967	C.00841 )
( 1379 )	GS 3	9MY1967	0.36828 )	( 1380 )	GS 4	9MY1967	0.05213 )	( 1381 )	GS 5	10MY1967	C.02101 )
( 1382 )	GS 6	10MY1967	0.06939 )	( 1383 )	GS 7	10MY1967	0.09356 )	( 1384 )	GS 8	10MY1967	C.06650 )
( 1385 )	GS 9	10MY1967	0.02590 )	( 1386 )	GS10	12MY1967	0.27866 )	( 1387 )	GS11	12MY1967	C.75214 )
( 1388 )	GS12	12MY1967	0.35596 )	( 1389 )	GS13	12MY1967	0.08767 )	( 1390 )	GS14	12MY1967	C.39342 )
( 1391 )	GS15	12MY1967	0.42140 )	( 1392 )	GS16	12MY1967	0.72118 )	( 1393 )	GS17	13MY1967	0.54789 )
( 1394 )	GS18	13MY1967	1.32453 )	( 1395 )	GS19	13MY1967	0.18202 )	( 1396 )	GS20	13MY1967	C.05179 )
( 1397 )	GS21	13MY1967	0.16744 )	( 1398 )	GS22	14MY1967	0.12448 )	( 1554 )	GS 1	30C1967	C.01423 )

( 1555	GS 2	30C1967	0.01059 )	( 1556	GS 3	30C1967	0.30766 )	( 1557	GS 4	30C1967	C.23169 )
( 1558	GS 5	40C1967	0.05549 )	( 1559	GS 7	40C1967	C.01399 )	( 1560	GS 8	40C1967	C.C1417 )
( 1561	GS 9	40C1967	0.00587 )	( 1562	GS10	50C1967	C.00740 )	( 1563	GS11	50C1967	0.03040 )
( 1564	GS12	50C1967	0.00658 )	( 1565	GS13	50C1967	C.01014 )	( 1566	GS14	50C1967	C.C2302 )
( 1567	GS15	50C1967	0.31754 )	( 1568	GS16	50C1967	C.12698 )	( 1569	GS17	50C1967	C.55594 )
( 1570	GS18	50C1967	0.87267 )	( 1571	GS19	60C1967	C.04507 )	( 1572	GS20	60C1967	C.C1622 )
( 1573	GS21	60C1967	0.22622 )	( 1574	GS22	60C1967	C.04027 )	( 1575	GS28	60C1967	C.25804 )
( 1544	MU 1	20C1967	C.22160 )	( 1547	MS 1	20C1967	C.27944 )	( 1524	MI 1	20SE1967	C.32837 )
( 1546	LU 1	20C1967	0.88031 )	( 1520	HC 1	18SE1967	C.75440 )	( 1521	SH 1	18SE1967	C.30002 )
( 1523	RA 1	15SE1967	0.C3650 )	( 1525	PM 1	20SE1967	C.01393 )	( 1526	MO 1	20SE1967	C.15930 )
( 1527	TR 1	20SE1967	0.18239 )	( 1528	SB 1	20SE1967	0.07219 )	( 1529	KW 1	20SE1967	C.05996 )
( 1530	FR 1	24SE1967	C.01000 )	( 1531	GH 1	25SE1967	C.29586 )	( 1545	WL 1	20C1967	1.94608 )
( 1548	CA 1	30C1967	0.07633 )	( 1549	MG 1	40C1967	C.09593 )	( 1551	ES 1	50C1967	C.67698 )
( 1552	SM 1	60C1967	0.16507 )	( 1550	MR 1	50C1967	C.73101 )	( 1553	SG 1	60C1967	0.49941 )
( 1428	MU 2	25MY1967	0.10546 )	( 1426	MS 2	29MY1967	0.03150 )	( 1351	MI 2	21AP1967	C.19550 )
( 1427	LU 2	29MY1967	0.50847 )	( 1417	HO 2	22MY1967	0.59818 )	( 1418	SH 2	22MY1967	C.24883 )
( 1350	BH 2	19AP1967	C.12995 )	( 1425	RA 2	25MY1967	C.39784 )	( 1359	PM 2	5MY1967	C.56487 )
( 1401	MO 2	6MY1967	C.84078 )	( 1402	TR 2	6MY1967	1.03964 )	( 1400	SB 2	6MY1967	C.8518C )
( 1352	KW 2	21AP1967	0.72153 )	( 1353	FR 2	23AP1967	0.17932 )	( 1354	GH 2	25AP1967	C.14499 )
( 1429	WL 2	29MY1967	0.25727 )	( 1403	CA 2	10MY1967	1.76540 )	( 1404	MO 2	10MY1967	C.1C163 )
( 1405	ES 2	12MY1967	0.40635 )	( 1407	SM 2	14MY1967	0.57921 )	( 1349	CI 2	19AP1967	C.30175 )
( 1406	GB 2	13MY1967	0.04044 )	( 1419	BU 2	23MY1967	0.58587 )	( 1420	IH 2	23MY1967	C.18127 )
( 1421	CH 2	23MY1967	0.74601 )	( 1422	GA 2	23MY1967	0.77658 )	( 1423	HA 2	25MY1967	1.52015 )
( 1424	KN 2	25MY1967	0.83933 )	(							

*Stephanodiscus astraea* (Ehr.) Grun. in Cl. and Grun.

*Discoplea ? astraea* Ehrenberg, Ber. Akad. Wiss. Berlin, 1844:267. 1844.

*Cyclotella astraea* (Ehr.) Kützinger, Sp. Alg., p. 19. 1849.

*Stephanodiscus astraea* (Ehr.) Grunow, in Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):114. 1880.

Cells circular in valve view and rectangular in girdle view. Vegetative cells always occur singly. Radial striae in biseriate fascicles near the margin of the valve, becoming uniseriate and disorganized near the center of the valve which is markedly concave. Puncta in the radial striae distinct, 16-19 in 10 $\mu$ . The fascicles are closely packed with only a narrow hyaline space separating them. The spines in this species are submarginal and irregularly arranged, usually between every 2-4 fascicles. Fascicles 6-8 in 10 $\mu$  at the margins of the valves. In this taxon the fine, irregularly punctate ornamentation of the valve mantle is visible as a margin which is separated from the ornamentation of the valve surface by a narrow hyaline space. The spines arise from the inner border of the apparent margin.

Despite the fact that this is the most widely reported species of the genus, numerous problems of both circumscription and formal nomenclature are attached to it. I have not had the opportunity to observe authentic material of *Discoplea astraea*. Material annotated by Grunow, author of the combination, upon whose illustrations and verified specimens most modern treatments of this taxon are based is available in the United States and is the basis of our concept of the taxon.

Many of the authors that have treated the Lake Michigan plankton have either failed to distinguish this species from *S. niagarae* or have considered the two taxa to be synonymous. Cleve-Euler (1951) has made a variety, *S. astraea* var. *niagarae*, and has pointed out the close morphologic similarity of the two forms. Although this contention cannot be dismissed lightly, substantial differences do exist in the morphology of apparently discrete populations from the upper Great Lakes region and we chose to take the taxonomically conservative position that the two taxa, as circumscribed, represent distinct genetic entities unless it can be shown experimentally that the range of variation observed can be accommodated by a single genome.



The formal nomenclature of this species has been beclouded by the great number of "varieties," some with strikingly different morphology, that have been attached to it. It is our contention that a number of these entities should be treated as separate entities as their resemblance to the typical species is, at best, superficial.

Hendy (1964) has made a new combination, *S. rotula* (Kütz.) Hendy, citing *S. astraea* (Ehr. ex Kütz.) Grun. in Cleve and Grunow as a synonym. Hendy's reasoning on this is obscure in that Klützing (1849) clearly indicates that *Cyclotella rotula* Kützing (1844) is a later synonym of *Discoplea ? astraea* Ehrenberg (1844) and further makes a new combination *Cyclotella astraea* (Ehr.) Klütz. based on that epithet. In order to make his intentions fully clear he then proceeds to make a new, and by current rules thoroughly illegal, combination *C. rotula* (Ehr.) Klütz. based on *Discoplea ? rotula* Ehr. (1844). Although Klützing's name juggling seems to have confused Hendy, such was not the case with Grunow as he clearly refers the specific epithet to Ehrenberg's type along with Klützing's synonym.

This species, despite the relatively large number of reports referring to it, is rare in the plankton of the major portion of the Lake Michigan basin. It occurs in considerable quantity in estuaries and inshore waters that are appreciably eutrophied. It is also one of the most common members of the genus in smaller lakes throughout the state.

635 STASTRAE TOT NO OF STATICS 33

( 1232	E 5	16MY1964	0.00174 )	( 1236	C* 1	8JN1964	C.00875 )	( 1237	C* 2	8JN1964	C.00773 )
( 1238	D 3	11JN1964	0.00200 )	( 1241	E 2	13JN1964	C.00296 )	( 1264	C* 1	10AU1964	C.00193 )
( 1266	D 3	18AU1964	0.00351 )	( 1274	C 1	17SE1964	C.00469 )	( 1309	C* 1	10NC1964	C.00322 )
( 1337	C 3	2MR1967	0.00294 )	( 1338	C 3	28MR1967	0.00132 )	( 1341	A 3	19AP1967	C.00108 )
( 1342	A 4	19AP1967	0.00180 )	( 1411	C 3	31MY1967	C.00821 )	( 1416	E 5	28MY1967	C.00342 )
( 1432	A 4	13JN1967	0.00511 )	( 1437	E 3	15JN1967	0.00269 )	( 1380	GS 4	9MY1967	C.00168 )
( 1384	GS 8	10MY1967	0.00185 )	( 1289	GS13	12MY1967	C.00258 )	( 1566	GS14	5CC1967	C.00183 )
( 1544	PU 1	20C1967	0.04766 )	( 1520	PD 1	18SE1967	C.39606 )	( 1526	PD 1	20SE1967	C.00569 )
( 1531	GH 1	25SE1967	0.01691 )	( 1428	PU 2	29MY1967	0.01808 )	( 1417	PD 2	22MY1967	C.77763 )
( 1418	SH 2	22MY1967	0.01555 )	( 1350	BH 2	19AP1967	C.00220 )	( 1354	GH 2	25AP1967	C.01381 )
( 1429	NL 2	25MY1967	0.04247 )	( 1406	GB 2	13MY1967	0.11592 )	( 1419	BU 2	23MY1967	C.07323 )

*Stephanodiscus binderanus* (Kütz.) Krieger

*Melosira binderana* Klütz., Bacill., p. 55, pl. 2, fig. 1. 1844.

*Stephanodiscus binderanus* (Kütz.) Krieger, Pflanzenforsch. 10:21. 1927.

Cells circular in valve view and rectangular in girdle view, elongate in the perivalvar axis. Vegetative cells always occur in colonies, attached at the valve surface. Valves of specimens from Lake Michigan 8-22 $\mu$  in diameter, valve surfaces planar. The radial striae are not united into well defined fascicles. Ornamentation of the valve surface is very irregular in this species. In some specimens the poroids are arranged in definite rows and a secondary level of radial ribs is visible, in others the ornamentation of the valve is only partially developed and its order is obscured. A border of small, regularly arranged, submarginal spines is present. The slime pores are not directly below the spines on the valve mantle in this species as they are in most other members of the genus. Because of the shallow valve mantle the slime pores, which are irregularly arranged, are highly visible and their thickened bases may be confused with spines unless care is taken. Puncta in the radial striae about 20-24 in 10 $\mu$ . Submarginal spines 8-10 in 10 $\mu$ , usually 3-5 spines occur between each slime pore.

As Krieger (1927) points out the frustular structure and the sequence of formation of elements of the frustule in this species are essentially similar to other species of *Stephanodiscus* and much different from *Melosira* (Reimann 1960). Its superficial resemblance to the latter genus is only based on its consistent colonial growth habit. A number of the smaller species of *Stephanodiscus* show a greater or lesser tendency to adopt the colonial habit. Great care must be taken if these species are to be distinguished. It is to be emphasized that there is no certain way to distinguish them in living material.

This species is apparently a recent introduction into the flora of Lake Michigan. We have not been able to find records of its occurrence prior to 1938. It is now present in polluted inshore areas throughout the lake and substantial spring blooms have been noted in all parts of the lake in the past few years. Its introduction has caused substantial difficulties for filtration plants utilizing water from that lake in that its filamentous growth habit makes it an excellent filter clogger.

# 331 REBINDER TCT NO OF STATIONS 224

(46921)	CH	23NO1945	0.00065	(46514)	CH	19AP1946	0.48584	(46924)	CH	10MY1946	C.00141
(46912)	CH	AP1947	0.01150	(46516)	CH	4MY1947	C.00170	(46906)	CH	MY1947	C.00133
(46751)	EV	30MR1938	0.06695	(46772)	EV	18AP1938	0.01419	(46756)	EV	27AP1938	C.00884
(46761)	EV	27MY1938	0.00545	(1225)	C 6	15MY1964	0.09408	(1226)	C 7	16MY1964	0.35769
(1227)	C* 2	13MY1964	0.00329	(1228)	D 2	14MY1964	0.01557	(1229)	D 5	14MY1964	C.00634
(1230)	E 2	16MY1964	0.27263	(1231)	E 3	16MY1964	0.07093	(1232)	E 5	16MY1964	1.21743
(1233)	B 3	5JN1964	0.04287	(1234)	B 3	18JN1964	C.03936	(1235)	C 7	16JN1964	C.09038
(1439)	B 6	5JN1964	0.18781	(1236)	C* 1	8JN1964	0.01925	(1237)	C* 2	8JN1964	C.04383
(1238)	D 3	11JN1964	0.02800	(1239)	D 4	11JN1964	C.05570	(1240)	D 6	10JN1964	0.01994
(1241)	E 2	13JN1964	0.07393	(1242)	E 3	13JN1964	0.00150	(1243)	E 6	13JN1964	C.03758
(1244)	F 1	11JN1964	0.00548	(1245)	F 2	11JN1964	C.01383	(1246)	F 3	11JN1964	0.01195
(1440)	B 6	11JL1964	C.00369	(1441)	B 6	24JL1964	0.00881	(1250)	C 6	10JL1964	C.01644
(1251)	C 7	16JL1964	0.00579	(1252)	C* 1	16JL1964	C.00558	(1253)	C* 2	16JL1964	C.00228
(1254)	D 2	15JL1964	0.01724	(1255)	D 5	15JL1964	0.00513	(1256)	E 2	14JL1964	C.06228
(1258)	F 1	6JL1964	0.00236	(1259)	F 2	6JL1964	C.00930	(1260)	F 3	6JL1964	0.00382
(1442)	B 6	2AU1964	0.00682	(1264)	C* 1	10AU1964	0.00193	(1265)	C* 2	10AU1964	C.00224
(1266)	D 3	18AU1964	0.00351	(1267)	D 6	18AU1964	0.00649	(1268)	E 2	15AU1964	C.02462
(1270)	F 1	10AU1964	0.00272	(1273)	C* 2	10SE1964	C.00538	(1274)	D 1	17SE1964	C.04223
(1275)	D 2	17SE1964	0.02580	(1278)	D 6	18SE1964	0.00384	(1279)	E 1	16SE1964	C.13743
(1280)	E 2	16SE1964	0.00681	(1284)	E 6	17SE1964	C.04448	(1285)	F 1	15SE1964	C.00582
(1288)	B 3	15OC1964	0.00218	(1289)	C 7	14OC1964	0.00440	(1290)	C* 1	16OC1964	C.01137
(1291)	C* 2	16OC1964	C.00734	(1293)	D 2	15OC1964	0.00472	(1294)	D 3	15OC1964	C.00330
(1297)	D 6	14OC1964	0.00190	(1303)	E 6	13OC1964	C.00560	(1308)	C 7	6NO1964	C.00304
(1309)	C* 1	10NO1964	C.00322	(1310)	C* 2	10NO1964	C.00227	(1311)	D 1	8NO1964	C.00774
(1312)	D 2	8NO1964	C.04656	(1313)	D 3	9NO1964	C.00386	(1314)	D 4	9NO1964	C.00574
(1316)	D 6	9NO1964	0.00378	(1317)	E 1	6NO1964	0.00574	(1320)	E 4	7NO1964	0.00414
(1321)	F 5	7NO1964	0.00319	(1325)	F 3	6NO1964	C.00252	(1336)	C 3	27JA1967	C.01733
(1337)	C 3	2MR1967	4.88690	(1338)	C 3	28MR1967	7.40466	(1339)	C 5	28MR1967	C.29307
(1340)	C 7	28MR1967	8.29704	(1341)	A 3	19AP1967	1.89840	(1342)	A 4	19AP1967	C.19490
(1343)	A 6	19AP1967	42.65001	(1344)	C 3	25AP1967	0.63694	(1345)	C 5	25AP1967	C.24755
(1346)	C 7	21AP1967	1.58893	(1347)	E 2	23AP1967	1.93480	(1348)	E 5	23AP1967	4.89376
(1368)	A 3	4MY1967	1.64939	(1369)	A 4	4MY1967	0.02236	(1370)	A 6	3MY1967	2.41685
(1371)	C 3	4MY1967	0.03001	(1372)	C 5	5MY1967	0.00709	(1373)	C 7	5MY1967	C.12836
(1374)	E 2	7MY1967	0.62762	(1375)	E 3	7MY1967	C.10106	(1376)	E 5	6MY1967	2.55790
(1408)	A 3	24MY1967	0.03130	(1410)	A 6	24MY1967	C.00564	(1411)	C 3	31MY1967	C.00410
(1412)	C 5	31MY1967	0.00842	(1413)	C 7	25MY1967	C.04422	(1414)	E 2	28MY1967	C.01008
(1415)	E 3	28MY1967	0.00450	(1416)	E 5	28MY1967	2.09058	(1431)	A 3	12JN1967	C.01030
(1432)	A 4	13JN1967	0.00766	(1433)	C 3	17JN1967	0.05167	(1434)	C 5	17JN1967	C.00299
(1435)	C 7	13JN1967	0.22101	(1436)	E 2	15JN1967	0.01809	(1437)	E 3	15JN1967	C.00269
(1438)	E 5	14JN1967	0.55919	(1447)	A 4	11JL1967	0.00234	(1448)	A 6	10JL1967	C.00354
(1449)	C 3	16JL1967	0.65548	(1450)	C 5	16JL1967	0.00381	(1451)	C 7	16JL1967	C.34447
(1452)	E 2	14JL1967	0.03832	(1453)	E 3	15JL1967	0.00758	(1511)	E 2	15E1967	C.01535
(1513)	E 5	31AU1967	0.00507	(1532)	A 3	18SE1967	0.00657	(1533)	A 4	19SE1967	C.00464
(1536)	E 2	24SE1967	0.00273	(1537)	E 3	24SE1967	0.00431	(1538)	E 5	23SE1967	C.00552
(1540)	C 5	4OC1967	0.00992	(1541)	E 2	11OC1967	C.01064	(1542)	E 3	11OC1967	C.00505
(1377)	GS 1	9MY1967	0.00792	(1378)	GS 2	9MY1967	C.23969	(1380)	GS 4	9MY1967	1.76560
(1381)	GS 5	10MY1967	1.00176	(1382)	GS 6	10MY1967	1.36001	(1383)	GS 7	10MY1967	4.11677
(1384)	GS 8	10MY1967	3.62325	(1385)	GS 9	10MY1967	1.23614	(1386)	GS10	12MY1967	2.41310
(1387)	GS11	12MY1967	1.52487	(1388)	GS12	12MY1967	0.42232	(1389)	GS13	12MY1967	1.80491
(1390)	GS14	12MY1967	1.64416	(1391)	GS15	12MY1967	4.02241	(1392)	GS16	12MY1967	10.13961
(1393)	GS17	13MY1967	4.79399	(1394)	GS18	13MY1967	5.65934	(1395)	GS19	13MY1967	45.62321
(1396)	GS20	13MY1967	15.58951	(1397)	GS21	13MY1967	54.71146	(1398)	GS22	14MY1967	C.17306
(1554)	GS 1	30C1967	0.00356	(1555)	GS 2	30C1967	C.00353	(1557)	GS 4	30C1967	0.01495
(1558)	GS 5	40C1967	0.01586	(1560)	GS 8	40C1967	0.02361	(1561)	GS 9	40C1967	C.02935
(1562)	GS10	50C1967	0.00740	(1563)	GS11	50C1967	0.01871	(1564)	GS12	50C1967	C.14484
(1565)	GS13	50C1967	0.04056	(1566)	GS14	50C1967	0.23298	(1567)	GS15	50C1967	C.01111
(1568)	GS16	50C1967	0.31457	(1569)	GS17	50C1967	0.01338	(1571)	GS19	60C1967	C.32782
(1572)	GS20	60C1967	0.34700	(1573)	GS21	60C1967	1.80305	(1574)	GS22	60C1967	C.00575
(1575)	GS28	60C1967	0.07225	(1544)	MU 1	20C1967	C.00715	(1547)	MS 1	20C1967	C.05589
(1524)	MI 1	20SE1967	0.15324	(1546)	LU 1	20C1967	6.00210	(1520)	FO 1	18SE1967	C.03300
(1521)	SH 1	18SE1967	0.18463	(1522)	BH 1	18SE1967	0.25346	(1523)	FA 1	19SE1967	1.91882
(1525)	PW 1	20SE1967	0.41777	(1526)	MO 1	20SE1967	3.36804	(1527)	TR 1	20SE1967	1.50943
(1528)	SB 1	20SE1967	1.15507	(1529)	KH 1	20SE1967	0.07195	(1530)	FR 1	24SE1967	C.38004
(1531)	GH 1	25SE1967	0.10144	(1545)	WL 1	20C1967	0.21623	(1549)	MC 1	40C1967	0.02741

( 1551 )	ES 1	50C1967	0.17573 )	( 1552 )	SM 1	60C1967	0.61406 )	( 1550 )	MR 1	50C1967	0.49560 )
( 1553 )	SG 1	60C1967	1.17509 )	( 1428 )	MU 2	29MY1967	2.02477 )	( 1426 )	MS 2	29MY1967	0.19948 )
( 1351 )	MI 2	21AP1967	24.32893 )	( 1427 )	LU 2	29MY1967	0.18160 )	( 1417 )	HO 2	22MY1967	32.06221 )
( 1418 )	SH 2	22MY1967	0.20218 )	( 1350 )	BH 2	19AP1967	3.91181 )	( 1425 )	RA 2	25MY1967	6.36548 )
( 1399 )	PW 2	5MY1967	3.37323 )	( 1401 )	MO 2	6MY1967	10.81844 )	( 1402 )	TR 2	6MY1967	8.92354 )
( 1400 )	SB 2	6MY1967	1.23898 )	( 1352 )	KW 2	21AP1967	10.85724 )	( 1353 )	FR 2	23AP1967	14.17721 )
( 1354 )	GH 2	25AP1967	56.72563 )	( 1429 )	WL 2	29MY1967	6.96465 )	( 1403 )	CA 2	10MY1967	1.42540 )
( 1404 )	MO 2	10MY1967	1.06707 )	( 1405 )	ES 2	12MY1967	5.67595 )	( 1407 )	SM 2	14MY1967	18.82127 )
( 1349 )	CI 2	15AP1967	29.08253 )	( 1406 )	GB 2	13MY1967	0.00809 )	( 1419 )	BU 2	23MY1967	0.85711 )
( 1420 )	IH 2	23MY1967	0.95166 )	( 1421 )	CH 2	23MY1967	0.45108 )	( 1422 )	GA 2	23MY1967	0.60287 )
( 1423 )	WA 2	25MY1967	9.59192 )	( 1424 )	KA 2	25MY1967	4.90274 )	( )			

*Stephanodiscus hantzschii* Grun.

*Stephanodiscus hantzschii* Grunow in Cleve and Grunow, K. Svenska Vet.-Akad. Handl., Ny Följd, 17(2):115. 1880.

*Stephanodiscus hantzschianus* Grun. in Van Heurck, Syn. Diat. Belgique, p. 216, pl. 95, fig. 10. 1885.

Cells circular in valve view and square in girdle view. Vegetative cells may occur singly or in colonies of up to 100 cells. Valves of specimens from Lake Michigan 8-22 $\mu$  in diameter with very slightly concave centers. Radial striae in biseriate to quadriseriate fascicles at the valve margins, becoming uniseriate near the center of the valve. Puncta in the radial striae fine, somewhat difficult to resolve, 22-24 in 10 $\mu$ . Fascicles widely separated by a hyaline area that is not apparently thickened. The marginal spines occur regularly at the ends of each hyaline ray and arise from noticeably thickened bases. Placement of the spines is very regular in this taxon and they are irregular or missing only on grossly abnormal specimens. Fascicles and spines 8-11 in 10 $\mu$  at the margins of the valves.

Our concept of this taxon is based on specimens examined by Grunow in the Van Heurck exsiccatae (Types du Synopsis no. 482). It closely resembles several of the other smaller species of *Stephanodiscus* and adequate optical equipment, used with care, is necessary to distinguish it from these species. On the basis of our observations it is rare in the off-shore flora and only becomes abundant in harbors and eutrophied inshore areas.

643 SIHANIZS TOT NO OF STATIONS 199

( 3540 )	CH	11MY1879	0.19569 )	( 3507 )	CH	19FE1881	0.06792 )	( 46910 )	CH	0C1945	0.00105 )
( 46908 )	CH	DE1945	0.01007 )	( 46914 )	CH	19AP1946	0.55524 )	( 46924 )	CH	10MY1946	0.22927 )
( 46923 )	CH	22NO1946	0.01967 )	( 46920 )	CH	20DE1946	0.00431 )	( 46905 )	CH	JAI1947	0.00613 )
( 46909 )	CH	MR1947	0.01366 )	( 46912 )	CH	AP1947	0.08049 )	( 46916 )	CH	4MY1947	0.00577 )
( 46906 )	CH	MY1947	0.08628 )	( 46919 )	CH	5JN1947	0.02124 )	( 46907 )	CH	JL1947	0.00394 )
( 46922 )	CH	21AU1947	0.00485 )	( 46772 )	EV	18AP1938	0.00710 )	( 46756 )	EV	27AP1938	0.00336 )
( 46761 )	EV	27MY1938	0.06273 )	( 1224 )	B 4	18MY1964	0.00196 )	( 1225 )	C 6	15MY1964	0.03136 )
( 1226 )	C 7	16MY1964	0.05327 )	( 1227 )	C* 2	13MY1964	0.00110 )	( 1228 )	D 2	14MY1964	0.01752 )
( 1229 )	D 5	14MY1964	0.02749 )	( 1230 )	E 2	16MY1964	0.07408 )	( 1231 )	E 3	16MY1964	0.03665 )
( 1232 )	E 5	16MY1964	0.06087 )	( 1233 )	B 3	5JN2964	0.02620 )	( 1234 )	B 3	18JN1964	0.02530 )
( 1235 )	C 7	16JN1964	0.03954 )	( 1439 )	B 6	5JN1964	0.10589 )	( 1236 )	C* 1	8JN1964	0.03151 )
( 1237 )	C* 2	8JN1964	0.04383 )	( 1238 )	D 3	11JN1964	0.01600 )	( 1239 )	D 4	11JN1964	0.00116 )
( 1240 )	D 6	10JN1964	0.05829 )	( 1241 )	E 2	13JN1964	0.15081 )	( 1243 )	E 6	13JN1964	0.01670 )
( 1244 )	F 1	11JN1964	0.03399 )	( 1245 )	F 2	11JN1964	0.10027 )	( 1246 )	F 3	11JN1964	0.02988 )
( 1440 )	B 6	11JL1964	0.01474 )	( 1441 )	B 6	24JL1964	0.01542 )	( 1250 )	C 6	10JL1964	0.15733 )
( 1251 )	C 7	16JL1964	0.00869 )	( 1252 )	C* 1	16JL1964	0.01116 )	( 1253 )	C* 2	16JL1964	0.00685 )
( 1254 )	D 2	15JL1964	0.01145 )	( 1255 )	D 5	15JL1964	0.01540 )	( 1256 )	E 2	14JL1964	0.02297 )
( 1257 )	E 3	14JL1964	0.00957 )	( 1258 )	F 1	6JL1964	0.04248 )	( 1259 )	F 2	6JL1964	0.01859 )
( 1260 )	F 3	6JL1964	0.00764 )	( 1264 )	C* 1	10AU1964	0.01545 )	( 1265 )	C* 2	10AU1964	0.00894 )
( 1267 )	D 6	18AU1964	0.00216 )	( 1268 )	E 2	15AU1964	0.00821 )	( 1269 )	E 3	15AU1964	0.00274 )
( 1271 )	C 7	22SE1964	0.00653 )	( 1272 )	C* 1	10SE1964	0.05336 )	( 1273 )	C* 2	10SE1964	0.01613 )
( 1274 )	D 1	17SE1964	0.01408 )	( 1275 )	D 2	17SE1964	0.01290 )	( 1276 )	D 3	18SE1964	0.01118 )
( 1277 )	D 4	18SE1964	0.00620 )	( 1278 )	D 6	18SE1964	0.00769 )	( 1279 )	E 1	16SE1964	0.01178 )
( 1281 )	E 3	16SE1964	0.00392 )	( 1283 )	E 5	16SE1964	0.00613 )	( 1284 )	E 6	17SE1964	0.00635 )
( 1285 )	F 1	15SE1964	0.01747 )	( 1287 )	F 3	15SE1964	0.01501 )	( 1292 )	D 1	15OC1964	0.00373 )
( 1295 )	D 4	15OC1964	0.01189 )	( 1297 )	D 6	14OC1964	0.00571 )	( 1298 )	E 1	12OC1964	0.00269 )
( 1300 )	E 3	13OC1964	0.00716 )	( 1301 )	E 4	13OC1964	0.00442 )	( 1303 )	E 6	13OC1964	0.01119 )
( 1304 )	F 1	11OC1964	0.00247 )	( 1306 )	F 3	11OC1964	0.00277 )	( 1307 )	B 6	NO1964	0.00361 )
( 1308 )	C 7	6NO1964	0.00912 )	( 1309 )	C* 1	10NO1964	0.00643 )	( 1311 )	D 1	8NO1964	0.00258 )
( 1312 )	D 2	8NO1964	0.00310 )	( 1313 )	D 3	9NO1964	0.00193 )	( 1315 )	D 5	9NO1964	0.00910 )
( 1317 )	E 1	6NO1964	0.00383 )	( 1318 )	E 2	7NO1964	0.00190 )	( 1319 )	E 3	7NO1964	0.00262 )
( 1320 )	E 4	7NO1964	0.00207 )	( 1323 )	F 1	6NO1964	0.00139 )	( 1325 )	F 3	6NO1964	0.00252 )
( 1336 )	C 3	27JA1967	0.00193 )	( 1337 )	C 3	2MR1967	0.00147 )	( 1338 )	C 3	28MR1967	0.01190 )
( 1339 )	C 5	28MR1967	0.04365 )	( 1340 )	C 7	28MR1967	0.81443 )	( 1341 )	A 3	19AP1967	0.15187 )
( 1342 )	A 4	19AP1967	0.01624 )	( 1343 )	A 6	19AP1967	0.35710 )	( 1344 )	C 3	25AP1967	0.00165 )
( 1346 )	C 7	21AP1967	0.07878 )	( 1347 )	E 2	23AP1967	0.00976 )	( 1348 )	E 5	23AP1967	0.14805 )
( 1370 )	A 6	3MY1967	0.13580 )	( 1371 )	C 3	4MY1967	0.00231 )	( 1374 )	E 2	7MY1967	0.02092 )
( 1376 )	E 5	6MY1967	0.11525 )	( 1408 )	A 3	23MY1967	0.01342 )	( 1410 )	A 6	24MY1967	0.00564 )
( 1411 )	C 3	31MY1967	0.01231 )	( 1412 )	C 5	31MY1967	0.00421 )	( 1415 )	E 3	28MY1967	0.00450 )
( 1416 )	E 5	28MY1967	0.07654 )	( 1431 )	A 3	12JN1967	0.00772 )	( 1432 )	A 4	13JN1967	0.00511 )
( 1433 )	C 3	17JN1967	0.00646 )	( 1434 )	C 5	17JN1967	0.00299 )	( 1435 )	C 7	13JN1967	0.01263 )

( 1438	E 5	14JN1967	0.01452 )	( 1451	C 7	16JL1967	0.05512 )	( 1452	E 2	14JL1967	C.00852 )
( 1454	E 5	15JL1967	0.00200 )	( 1504	A 3	28AU1967	0.00741 )	( 1506	A 6	29AU1967	C.00523 )
( 1532	A 3	18SE1967	0.00329 )	( 1537	E 3	24SE1967	0.00431 )	( 1540	C 5	40C1967	C.00496 )
( 1541	E 2	110C1967	C.00532 )	( 1543	E 5	100C1967	C.00718 )	( 1378	GS 2	9MY1967	C.00421 )
( 1379	GS 3	9MY1967	0.00309 )	( 1380	GS 4	9MY1967	0.01177 )	( 1381	GS 5	10MY1967	0.01431 )
( 1383	GS 7	10MY1967	0.00267 )	( 1384	GS 8	10MY1967	0.00555 )	( 1385	GS 9	10MY1967	C.00706 )
( 1387	GS11	12MY1967	0.00396 )	( 1389	GS13	12MY1967	0.00258 )	( 1392	GS16	12MY1967	0.00308 )
( 1395	GS19	13MY1967	0.00705 )	( 1396	GS20	13MY1967	0.00296 )	( 1397	GS21	13MY1967	C.00196 )
( 1554	GS 1	30C1967	0.00356 )	( 1555	GS 2	30C1967	0.00353 )	( 1563	GS11	50C1967	C.00234 )
( 1565	GS13	50C1967	0.01014 )	( 1566	GS14	50C1967	0.00734 )	( 1567	GS15	50C1967	C.00476 )
( 1568	GS16	50C1967	0.00289 )	( 1569	GS17	50C1967	0.00297 )	( 1570	GS18	50C1967	C.00992 )
( 1571	GS19	60C1967	0.00117 )	( 1572	GS20	60C1967	0.00631 )	( 1573	GS21	60C1967	C.00560 )
( 1574	GS22	60C1967	0.00288 )	( 1575	GS28	60C1967	0.00387 )	( 1544	MU 1	20C1967	C.02383 )
( 1546	LU 1	20C1967	0.02501 )	( 1520	HO 1	18SE1967	0.04243 )	( 1521	SH 1	18SE1967	C.03462 )
( 1522	BH 1	18SE1967	0.21334 )	( 1523	RA 1	19SE1967	0.00923 )	( 1526	MO 1	20SE1967	C.00569 )
( 1527	TR 1	20SE1967	0.00629 )	( 1531	GH 1	25SE1967	0.00845 )	( 1545	WL 1	20C1967	0.23650 )
( 1548	CA 1	30C1967	0.01272 )	( 1549	MQ 1	40C1967	0.01370 )	( 1550	MR 1	50C1967	C.07434 )
( 1553	SG 1	60C1967	0.01469 )	( 1428	MU 2	25MY1967	0.48209 )	( 1426	KS 2	29MY1967	C.18898 )
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( 1418	SH 2	22MY1967	0.13997 )	( 1350	BH 2	19AP1967	1.05725 )	( 1425	RA 2	25MY1967	C.00884 )
( 1399	PW 2	5MY1967	0.00680 )	( 1402	TR 2	6MY1967	C.11912 )	( 1400	SB 2	6MY1967	C.25614 )
( 1352	KW 2	21AP1967	0.03436 )	( 1353	FR 2	23AP1967	0.04219 )	( 1354	CH 2	25AP1967	1.49133 )
( 1429	WL 2	29MY1967	3.22752 )	( 1403	CA 2	10MY1967	0.03923 )	( 1404	MQ 2	10MY1967	0.01270 )
( 1405	ES 2	12MY1967	0.01935 )	( 1407	SM 2	14MY1967	0.04180 )	( 1349	CI 2	19AP1967	C.05748 )
( 1406	GB 2	13MY1967	0.16983 )	( 1422	GA 2	23MY1967	0.02044 )	( 1423	WA 2	25MY1967	C.07708 )
( 1424	KN 2	25MY1967	0.03997 )								

*Stephanodiscus minutus* Grun. ex Cleve and Möll.

*Cyclotella minutula* Kütz., Bacill., p. 50, pl. 2, fig. 3. 1844.

*Stephanodiscus minutus* Grunow ex Cleve and Möller, Diatoms, #221. 1879.

*Stephanodiscus astraëa* var. *minutula* Grun. in V. H., Syn. Diat. Belgique, pl. 95, figs. 7, 8. 1882.

*Stephanodiscus balatonis* Pant., Res. Wiss. erforsch. Balatonsees, p. 105, pl. 15, fig. 324. 1902.

Cells circular in valve view and rectangular in girdle view. Vegetative cells always occur singly. Valves of specimens from Lake Michigan 4-22 $\mu$  in diameter with strongly concave centers. Radial striae in biseriate fascicles at the valve margins, becoming disorganized near the center of the valve. Puncta in the radial striae fine, more than 30 in 10 $\mu$ . Fascicles are separated by narrow but obviously thickened radial ribs. The marginal spines arise at the ends of each of these ribs. Placement of the spines is very regular in this species and they are irregular or missing only in grossly abnormal specimens. Fascicles and spines 15-18 in 10 $\mu$  at the margins of the valves.

Our concept of this taxon is based upon the material on Cleve and Möller slide #221. Most recent workers have considered this entity to be a variety of *S. astraëa*. The reason for this is difficult to discern as this species has only a superficial resemblance to *S. astraëa*. Its morphology is somewhat similar to that of *S. transilvanicus* but it differs from that taxon by its finer structure and in that the radial striae are always in fascicles of two.

Although *S. astraëa* var. *minutula* has been widely reported, the confusion surrounding this name makes it difficult to determine the actual distribution of the taxon we treat here. In our experience in Lake Michigan it is a minor component of the offshore flora and only becomes abundant in estuaries and eutrophied inshore areas of the lake.

(60973	CH	1876	0.02362	(46510	CH	0C1945	0.00218	(46921	CH	23NO1945	C.00129
(46917	CH	17JA1946	0.00055	(46515	CH	20FE1946	0.04552	(46914	CH	19AP1946	3.56443
(46923	CH	22NO1946	0.10928	(46520	CH	20FE1946	0.03358	(46905	CH	JA1947	C.01103
(46909	CH	MR1947	0.00911	(46512	CH	AP1947	0.08049	(46916	CH	4MY1947	C.24259
(46906	CH	MY1947	1.55304	(46519	CH	5JN1947	1.38086	(46907	CH	JL1947	C.73720
(46913	CH	6AU1947	0.02092	(46522	CH	21AU1947	0.10468	(46758	EV	5JN1937	C.19970
(46743	EV	20JN1937	0.21838	(46764	EV	17JL1937	0.02417	(46757	EV	25JL1937	C.01926
(46747	EV	1AU1937	0.00248	(46765	EV	30AU1937	0.00558	(46744	EV	6OC1937	C.01463
(46768	EV	16MR1938	0.01470	(46751	EV	30MR1938	C.07816	(46772	EV	18AP1938	0.01419
(46756	EV	27AP1938	0.18806	(46759	EV	19MY1938	0.02701	(46761	EV	27MY1938	C.06813
(46766	EV	14CE1938	0.01584	(1223	B 3	18MY1964	0.00469	(1224	B 4	18MY1964	C.00588
(1225	C 6	15MY1964	0.01176	(1226	C 7	16MY1964	0.01142	(1227	C* 2	13MY1964	C.00219
(1228	D 2	14MY1964	0.00973	(1229	D 5	14MY1964	0.19243	(1230	E 2	16MY1964	C.14224
(1231	E 3	16MY1964	0.85608	(1232	E 5	16MY1964	0.65046	(1233	B 3	5JN2964	0.01191
(1234	B 3	18JN1964	0.02530	(1439	B 6	5JN1964	0.15385	(1236	C* 1	8JN1964	C.00875
(1237	C* 2	8JN1964	C.05672	(1238	D 3	11JN1964	0.08200	(1239	D 4	11JN1964	C.00116
(1240	D 6	10JN1964	0.01381	(1241	E 2	13JN1964	0.34598	(1242	E 3	13JN1964	C.52453
(1243	E 6	13JN1964	0.03550	(1244	F 1	11JN1964	0.01864	(1245	F 2	11JN1964	C.06915
(1246	F 3	11JN1964	0.19124	(1440	B 6	11JL1964	0.06633	(1441	B 6	24JL1964	C.00881
(1250	C 6	10JL1964	0.02467	(1251	C 7	16JL1964	0.00579	(1252	C* 1	16JL1964	C.02232
(1253	C* 2	16JL1964	0.00913	(1254	D 2	15JL1964	0.08044	(1255	D 5	15JL1964	C.04363
(1256	E 2	14JL1964	0.08976	(1257	E 3	14JL1964	C.72736	(1258	F 1	8JL1964	C.02124
(1259	F 2	6JL1964	0.01549	(1260	F 3	6JL1964	0.01528	(1261	B 3	2AU1964	C.00196
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(1272	C* 1	10SE1964	0.00410	(1273	C* 2	10SE1964	0.00538	(1274	D 1	17SE1964	C.00469
(1279	E 1	16SE1964	0.00785	(1280	E 2	16SE1964	0.01362	(1282	E 4	16SE1964	C.01108
(1283	E 5	16SE1964	0.01226	(1285	F 1	15SE1964	C.01165	(1286	F 2	15SE1964	C.02189
(1288	B 3	15OC1964	0.00218	(1445	B 6	14CC1964	0.00652	(1289	C 7	14CC1964	C.0044C
(1292	D 1	15OC1964	0.00373	(1293	D 2	15OC1964	C.00472	(1294	D 3	15OC1964	C.00330
(1296	D 5	14OC1964	0.00787	(1297	D 6	14CC1964	0.00381	(1298	E 1	12OC1964	C.00808
(1299	F 2	12OC1964	0.01571	(1300	E 3	13OC1964	C.02864	(1301	E 4	13OC1964	C.01325
(1305	F 2	11OC1964	0.00173	(1307	B 6	NO1964	0.00361	(1309	C* 1	10NO1964	C.00161
(1310	C* 2	10NO1964	C.00227	(1311	C 1	8NO1964	0.00516	(1312	D 2	8NO1964	C.00621
(1313	D 3	9NO1964	0.00193	(1315	D 5	9NO1964	0.00455	(1317	E 1	6NO1964	0.00383
(1318	E 2	7NO1964	C.00380	(1319	E 3	7NO1964	C.00524	(1320	E 4	7NO1964	C.01034
(1321	E 5	7NO1964	0.00319	(1322	E 6	7NO1964	C.00667	(1323	F 1	6NO1964	C.00418
(1324	F 2	6NO1964	C.00699	(1336	C 3	27JA1967	C.00770	(1337	C 3	2MR1967	C.41153
(1338	C 3	28MR1967	1.38837	(1339	C 5	28MR1967	1.52772	(1340	C 7	28MR1967	1.27255
(1341	A 3	19AP1967	0.35364	(1342	A 4	19AP1967	1.26324	(1343	A 6	19AP1967	C.63221
(1344	C 3	25AP1967	0.09761	(1345	C 5	25AP1967	4.63910	(1346	C 7	21AP1967	C.31245
(1347	E 2	23AP1967	1.13812	(1348	E 5	23AP1967	3.93420	(1368	A 3	4MY1967	C.05655
(1369	A 4	4MY1967	0.15282	(1370	A 6	3MY1967	0.06215	(1371	C 3	4MY1967	C.03232
(1372	C 5	5MY1967	0.22698	(1373	C 7	5MY1967	C.01141	(1374	E 2	7MY1967	2.71966
(1375	E 3	7MY1967	0.24543	(1376	E 5	6MY1967	C.25298	(1408	A 3	23MY1967	C.01789
(1409	A 4	23MY1967	0.00298	(1410	A 6	24MY1967	C.00225	(1411	C 3	31MY1967	C.00410
(1412	C 5	31MY1967	0.01684	(1413	C 7	25MY1967	C.00632	(1414	E 2	28MY1967	C.01008
(1415	E 3	28MY1967	0.01799	(1416	E 5	28MY1967	C.15308	(1431	A 3	12JN1967	C.01030
(1432	A 4	13JN1967	0.01788	(1433	C 3	17JN1967	0.24545	(1434	C 5	17JN1967	C.01794
(1435	C 7	13JN1967	0.00631	(1436	E 2	15JN1967	0.01447	(1437	E 3	15JN1967	C.00538
(1438	E 5	14JN1967	0.03268	(1446	A 3	11JL1967	0.07827	(1447	A 4	11JL1967	C.03509
(1449	C 3	16JL1967	1.33746	(1450	C 5	16JL1967	0.33324	(1451	C 7	16JL1967	C.01772
(1452	E 2	14JL1967	0.69400	(1453	E 3	15JL1967	0.97313	(1454	E 5	15JL1967	C.01600
(1508	C 3	2SE1967	0.00799	(1511	E 2	1SE1967	C.42975	(1512	E 3	1SE1967	C.36909
(1532	A 3	18SE1967	0.01314	(1533	A 4	19SE1967	0.00464	(1534	A 6	19SE1967	C.00931
(1535	C 7	20SE1967	0.00322	(1536	E 2	24SE1967	0.12543	(1537	E 3	24SE1967	C.00288
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(1541	E 2	11OC1967	0.39381	(1542	E 3	11OC1967	0.10679	(1543	E 5	10OC1967	C.06465
(1379	GS 3	9MY1967	0.01857	(1380	GS 4	9MY1967	0.04708	(1381	GS 5	10MY1967	C.04055
(1382	GS 6	10MY1967	0.01943	(1383	GS 7	10MY1967	C.15772	(1384	GS 8	10MY1967	C.36972
(1385	GS 9	10MY1967	0.00471	(1386	GS10	12MY1967	0.04309	(1387	GS11	12MY1967	C.34854
(1390	GS14	12MY1967	0.01174	(1392	GS16	12MY1967	0.00616	(1393	GS17	13MY1967	0.00822
(1394	GS18	13MY1967	0.04988	(1395	GS19	13MY1967	0.01527	(1396	GS20	13MY1967	C.02886
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(1555	GS 2	3OC1967	0.02472	(1556	GS 3	3OC1967	0.03650	(1557	GS 4	3OC1967	0.01495
(1558	GS 5	4OC1967	0.01189	(1559	GS 7	4OC1967	0.00350	(1560	GS 8	4OC1967	C.01889
(1561	GS 9	4OC1967	0.01761	(1562	GS10	5OC1967	0.00740	(1563	GS11	5OC1967	C.00234
(1568	GS16	5OC1967	0.00144	(1569	GS17	5OC1967	C.00446	(1570	GS18	5OC1967	0.00992
(1571	GS19	6OC1967	0.00351	(1572	GS20	6OC1967	0.00631	(1573	GS21	6OC1967	C.10527
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(1547	MS 1	2OC1967	0.00798	(1546	LU 1	2OC1967	C.42015	(1521	SH 1	18SE1967	C.11539
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(1548	CA 1	3OC1967	0.01272	(1551	ES 1	5OC1967	0.12781	(1552	SM 1	6OC1967	C.03301
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(1417	HO 2	22MY1967	2.27307	(1350	BH 2	19AP1967	1.33918	(1425	FA 2	25MY1967	C.18566
(1399	PW 2	5MY1967	0.25843	(1401	MO 2	6MY1967	0.54680	(1402	TR 2	6MY1967	0.95300
(1400	SB 2	6MY1967	0.55397	(1352	KW 2	21AP1967	2.19893	(1353	FR 2	23AP1967	C.44304
(1354	GH 2	25AP1967	1.27039	(1429	WL 2	29MY1967	C.16987	(1403	CA 2	10MY1967	2.09232
(1404	MO 2	10MY1967	0.06352	(1405	ES 2	12MY1967	0.04515	(1407	SM 2	14MY1967	C.09554
(1349	CI 2	19AP1967	0.57475	(1406	GB 2	13MY1967	0.04313	(1419	BU 2	23MY1967	C.10985
(1420	JH 2	23MY1967	0.09063	(1421	CH 2	23MY1967	0.10409	(1422	GA 2	23MY1967	0.05620
(1423	WA 2	25MY1967	C.57808	(1424	KN 2	25MY1967	0.14655	(			

*Stephanodiscus niagarae* Ehr.

*Stephanodiscus niagarae* Ehrenberg, Ber. Akad. Wiss. Berlin 1845:80. 1845.

Cells circular in valve view and rectangular in girdle view. Vegetative cells always occur singly. Valves of specimens from Lake Michigan 42-94µ in diameter with slightly concave centers. Radial striae in biserial

fascicles near the valve margins, becoming uniseriate near the centers. Puncta in the radial striae coarse, 12-16 in 10 $\mu$ . Fascicles closely packed with only small hyaline spaces between them. The coarse spines of this species are sub-marginal and irregularly arranged, usually between each 2-4 fascicles. Fascicles 5-8 in 10 $\mu$  at the valve margin. In this taxon a prominent marginal area of fine, irregularly arranged puncta is present. The spines arise from the inner margin of this zone and it is separated from the fascicles by an unornamented space.

This species much resembles *S. astraea* (Ehr.) Grun. and a good deal of speculation has been put forth in the literature regarding the relationship between the two taxa and about their distributions. Our concept of *S. niagarae* is based upon specimens attributed to Bailey in the Academy of Natural Sciences of Philadelphia (ANSP 42768) which are believed to be derived from the original material from Niagara Falls from which this taxon was described.

642 STNIAQVM TOT NO OF STATIONS 222

160973	CH	1876	0.18895	( 3540	CH	11MY1879	0.01864	( 3541	CH	1FE1881	1.29121
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146920	CH	20DE1946	0.00585	( 46505	CH	JA1947	0.00613	( 46909	CH	MR1947	0.01366
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146919	CH	5JN1947	0.00607	( 46507	CH	JL1947	0.03205	( 46922	CH	21AU1947	0.02859
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( 1225	C 6	15MY1964	0.00392	( 1226	C 7	16MY1964	0.01903	( 1227	C* 2	13MY1964	0.00110
( 1228	D 2	14MY1964	0.01752	( 1229	D 5	14MY1964	0.00634	( 1230	E 2	16MY1964	0.02074
( 1231	E 3	16MY1964	0.04158	( 1232	E 5	16MY1964	0.01217	( 1233	B 3	18JN1964	0.02812
( 1236	C* 1	8JN1964	0.01225	( 1237	C* 2	8JN1964	0.01547	( 1238	D 3	11JN1964	0.00600
( 1241	E 2	13JN1964	0.00739	( 1242	E 3	13JN1964	0.00599	( 1243	E 6	13JN1964	0.01044
( 1244	F 1	11JN1964	0.00110	( 1245	F 2	11JN1964	0.00692	( 1246	F 3	11JN1964	0.00598
( 1247	B 3	14JL1964	0.00427	( 1255	D 5	15JL1964	0.00770	( 1256	E 2	14JL1964	0.00366
( 1257	E 3	14JL1964	0.00718	( 1258	F 1	6JL1964	0.00472	( 1259	F 2	6JL1964	0.00310
( 1260	F 3	6JL1964	0.00382	( 1262	B 3	17AU1964	0.00210	( 1264	C* 1	10AU1964	0.00386
( 1266	D 3	18AU1964	0.00351	( 1278	D 6	18SE1964	0.00384	( 1284	E 6	17SE1964	0.00318
( 1285	F 1	15SE1964	0.01165	( 1288	B 3	15OC1964	0.00218	( 1301	E 4	13OC1964	0.00883
( 1302	E 5	13OC1964	0.01620	( 1304	F 1	11OC1964	0.00494	( 1305	F 2	11OC1964	0.00345
( 1318	E 2	7NO1964	0.00190	( 1320	E 4	7NO1964	0.00207	( 1321	E 5	7NO1964	0.00638
( 1323	F 1	6NO1964	0.00557	( 1324	F 2	6NO1964	0.00699	( 1336	C 3	27JA1967	0.00385
( 1337	C 3	2MR1967	0.00294	( 1338	C 3	28MR1967	0.02248	( 1339	C 5	28MR1967	0.17148
( 1340	C 7	28MR1967	0.01018	( 1341	A 3	19AP1967	0.01953	( 1342	A 4	19AP1967	0.03248
( 1343	A 6	19AP1967	0.00347	( 1344	C 3	25AP1967	0.01324	( 1345	C 5	25AP1967	0.15009
( 1346	C 7	21AP1967	0.01865	( 1347	E 2	23AP1967	0.04065	( 1348	E 5	23AP1967	0.01919
( 1368	A 3	4MY1967	0.15708	( 1369	A 4	4MY1967	0.32800	( 1370	A 6	3MY1967	0.00691
( 1371	C 3	4MY1967	0.08080	( 1372	C 5	5MY1967	0.64548	( 1373	C 7	5MY1967	0.15118
( 1374	E 2	7MY1967	0.18828	( 1375	E 3	7MY1967	0.12512	( 1376	E 5	6MY1967	0.01968
( 1408	A 3	23MY1967	0.16992	( 1409	A 4	23MY1967	0.05356	( 1410	A 6	24MY1967	0.01691
( 1411	C 3	31MY1967	0.08206	( 1412	C 5	31MY1967	0.51772	( 1413	C 7	25MY1967	0.05370
( 1414	E 2	28MY1967	0.06045	( 1415	E 3	28MY1967	0.07870	( 1416	E 5	28MY1967	0.06123
( 1431	A 3	12JN1967	0.01287	( 1432	A 4	13JN1967	0.16093	( 1433	C 3	17JN1967	0.02584
( 1434	C 5	17JN1967	0.57722	( 1435	C 7	13JN1967	0.01579	( 1436	E 2	15JN1967	0.16092
( 1437	F 3	15JN1967	0.13458	( 1438	E 5	14JN1967	0.07262	( 1449	C 3	16JL1967	0.24456
( 1450	C 5	16JL1967	0.08565	( 1452	E 2	14JL1967	0.00639	( 1453	E 3	15JL1967	0.08847
( 1504	A 3	28AU1967	0.00247	( 1509	C 5	2SE1967	0.01009	( 1510	C 7	29AU1967	0.00316
( 1511	E 2	1SE1967	0.00921	( 1512	E 3	1SE1967	0.01963	( 1532	A 3	18SE1967	0.00329
( 1537	E 3	24SE1967	0.06465	( 1538	E 5	23SE1967	0.01105	( 1542	E 3	11OC1967	0.02034
( 1377	GS 1	9MY1967	0.05541	( 1378	GS 2	9MY1967	0.03364	( 1379	GS 3	9MY1967	0.13308
( 1380	GS 4	9MY1967	0.04540	( 1381	GS 5	10MY1967	0.02385	( 1382	GS 6	10MY1967	0.03886
( 1383	GS 7	10MY1967	0.07485	( 1384	GS 8	10MY1967	0.25880	( 1385	GS 9	10MY1967	0.02119
( 1386	GS10	12MY1967	0.16087	( 1387	GS11	12MY1967	0.25349	( 1388	GS12	12MY1967	0.84465
( 1389	GS13	12MY1967	0.18049	( 1390	GS14	12MY1967	0.32883	( 1391	GS15	12MY1967	0.83800
( 1392	GS16	12MY1967	0.73655	( 1393	GS17	13MY1967	0.46844	( 1394	GS18	13MY1967	0.96325
( 1395	GS19	13MY1967	0.69873	( 1396	GS20	13MY1967	0.49203	( 1397	GS21	13MY1967	0.77832
( 1398	GS22	14MY1967	0.04251	( 1554	GS 1	3OC1967	0.01423	( 1555	GS 2	3OC1967	0.00353
( 1556	GS 3	3OC1967	0.01043	( 1559	GS 7	4OC1967	0.01049	( 1560	GS 8	4OC1967	0.00945
( 1563	GS11	5OC1967	0.01637	( 1564	GS12	5OC1967	0.01152	( 1565	GS13	5OC1967	0.01014
( 1566	GS14	5OC1967	0.01835	( 1567	GS15	5OC1967	0.55570	( 1568	GS16	5OC1967	0.11255
( 1569	GS17	5OC1967	1.76891	( 1570	GS18	5OC1967	0.87267	( 1571	GS19	6OC1967	0.28684
( 1572	GS20	6OC1967	0.31545	( 1573	GS21	6OC1967	0.36509	( 1574	GS22	6OC1967	0.22436
( 1575	GS28	6OC1967	2.70940	( 1544	MU 1	2OC1967	0.24067	( 1547	MS 1	2OC1967	0.00798
( 1546	LU 1	2OC1967	0.02501	( 1520	HO 1	18SE1967	0.09901	( 1521	SH 1	18SE1967	0.00577
( 1522	BH 1	18SE1967	0.00365	( 1526	MO 1	20SE1967	0.01138	( 1527	TR 1	20SE1967	0.01887
( 1528	SB 1	20SE1967	0.02888	( 1531	GH 1	25SE1967	0.00845	( 1545	WL 1	2OC1967	0.04054
( 1549	MO 1	4OC1967	0.02741	( 1551	ES 1	5OC1967	0.11183	( 1552	SM 1	6OC1967	1.16210
( 1550	MR 1	5OC1967	1.32573	( 1553	SG 1	6OC1967	2.70270	( 1428	MU 2	29MY1967	0.67492
( 1426	MS 2	29MY1967	0.07349	( 1351	MI 2	21AP1967	0.01241	( 1427	LU 2	29MY1967	0.25424
( 1417	HO 2	22MY1967	0.10468	( 1418	SH 2	22MY1967	0.01555	( 1350	BH 2	19AP1967	0.02643
( 1425	RA 2	22MY1967	0.02652	( 1399	Ph 2	5MY1967	0.04761	( 1401	MO 2	6MY1967	0.02352

( 1402	TR 2	6MY1967	0.03790 )	( 1400	SB 2	6MY1967	0.02978 )	( 1352	KW 2	21AP1967	C.02577 )
( 1353	FR 2	23AP1967	0.01055 )	( 1354	GH 2	25AP1967	C.10874 )	( 1429	WL 2	29MY1967	C.44591 )
( 1403	CA 2	10MY1967	0.15692 )	( 1404	MC 2	10MY1967	C.19055 )	( 1405	ES 2	12MY1967	C.59985 )
( 1407	SM 2	14MY1967	1.52863 )	( 1349	CI 2	19AP1967	0.00718 )	( 1406	GB 2	13MY1967	C.86265 )
( 1419	BU 2	23MY1967	0.01831 )	( 1420	IH 2	23MY1967	0.01511 )	( 1421	CH 2	23MY1967	C.01735 )
( 1422	GA 2	23MY1967	0.01022 )	( 1423	WA 2	25MY1967	0.01285 )	( 1424	KN 2	25MY1967	C.06661 )

*Stephanodiscus niagarae* var. *magnifica* Fricke

*Stephanodiscus niagarae* var. *magnifica* Fricke, A. Schmidt's Atlas Diat., pl. 227, figs. 10-13. 1901.

Differs from the nominate variety in its more robust structure. The puncta in the fascicles are closely packed and appear hexagonal in surface focus and circular in deep focus. Valves of Lake Michigan specimens are from 42-106 $\mu$  in diameter. Puncta in the radial striae 10-12 in 10 $\mu$ . Fascicles 4-5 in 10 $\mu$ , becoming indistinct near the marginal zone due to irregular placement. The submarginal spines are very long and coarse and tend to be somewhat more regular in their placement than in the nominate variety. In the larger specimens a second circlet of smaller spines is found on the valve surface, surrounding the sunken central portion of the valve.

This entity reaches its greatest abundance in eutrophic, hardwater lakes in western North America. Its occurrence in Lake Michigan is limited to eutrophied inshore areas and estuaries.

641 STNAGAR ICT NO OF STATIONS 27

(60973	CH	1876	0.23618 )	(46516	CH	4MY1967	C.00068 )	(46763	EV	23AU1937	C.02029 )
(46760	EV	22SE1937	0.00492 )	( 1223	B 3	18MY1964	0.00156 )	( 1224	B 4	18MY1964	C.00196 )
( 1238	D 3	11JN1964	0.00600 )	( 1268	E 2	15AU1964	0.00274 )	( 1322	E 6	7NO1964	C.00333 )
( 1369	A 4	4MY1967	0.00745 )	( 1370	A 6	3MY1967	0.00230 )	( 1372	C 5	5MY1967	C.00709 )
( 1408	A 3	23MY1967	0.00894 )	( 1416	E 5	28MY1967	0.00875 )	( 1377	GS 1	9MY1967	C.00396 )
( 1382	GS 6	10MY1967	0.00278 )	( 1391	GS15	12MY1967	0.02394 )	( 1392	GS16	12MY1967	C.02157 )
( 1396	GS20	13MY1967	0.00518 )	( 1544	MU 1	2CC1967	0.01191 )	( 1520	HD 1	18SE1967	C.03300 )
( 1529	KW 1	20SE1967	0.01199 )	( 1531	GH 1	25SE1967	0.00845 )	( 1428	MU 2	29MY1967	C.00301 )
( 1417	HD 2	22MY1967	0.00374 )	( 1350	BH 2	19AP1967	C.00441 )	( 1406	GB 2	13MY1967	C.22645 )

*Stephanodiscus subtilis* (Van Goor) A. Cleve

*Melosira subtilis* Van Goor, Recueil Trav. Bot. Néerlandis, 21:359, fig. 8. 1924.

*Stephanodiscus subtilis* (Van Goor) A. Cleve-Euler, K. Svenska Vet.-Akad. Handl., Fjärde Serien, 2(1):54, fig. 72. 1951.

Cells circular in valve view and rectangular, elongate in the perivalvar axis, in girdle view. Vegetative cells always occur in filamentous colonies, joined at the valve surfaces. Cell walls are very lightly silicified, and the frustules are often deformed in prepared collections. Valves of specimens from Lake Michigan 6-22 $\mu$  in diameter, only slightly concave at the center. The radial striae are contained in biseriate fascicles near the margins of the valve. The fascicles gradually taper and become uniseriate as they approach the center of the valve but retain their identity. The center of the valve is usually marked by a rosette of puncta. Puncta in the radial striae very fine, barely resolvable with the light microscope, about 40 in 10 $\mu$ . The fascicles are separated by narrow, but appreciably thickened radial ribs. A very small marginal spine occurs at the termination of each rib. Fascicles 14-16 in 10 $\mu$  at the valve margin.

This species resembles *S. tenuis* in size and general morphologic structure but differs from that taxon in occurring in colonies, having biseriate rather than multiseriate fascicles of striae on the valve surface, and by its finer structure and ornamentation. Its structure also much resembles that of *S. damasi* Hust. (1949) but *S. subtilis* does not approach the maximum size of that taxon and has much finer ornamentation.

This species is apparently a recent introduction into the flora of Lake Michigan and has only been found in quantity in eutrophied areas that also have considerable chloride contamination. Previous reports of its occurrence indicate that it flourishes only in such situations.

716 THNANA TCT NO OF STATIONS 139

(46917	CH	12JA1946	0.00028 )	(46915	CH	20FE1946	C.C1707 )	(46924	CH	10PY1946	C.C4585 )
(46923	CH	22NO1946	0.01311 )	(46920	CH	20DE1946	0.00031 )	(46909	CH	MR1947	C.C1821 )
(46916	CH	4MY1947	0.00170 )	(46919	CH	5JN1947	C.00455 )	(46922	CH	21AU1947	C.C0097 )
(46758	EV	5JN1937	0.73461 )	(46771	EV	11JN1937	C.00238 )	(46764	EV	17JL1937	C.41096 )
(46757	EV	25JL1937	C.16850 )	(46747	EV	1AU1937	C.02475 )	(46763	EV	23AU1937	C.04058 )
(46752	EV	15SE1937	0.04354 )	(46750	EV	24SE1937	C.01885 )	(46748	EV	13OC1937	C.02135 )
(46745	EV	12MR1938	0.19420 )	(46762	EV	18MR1938	C.04411 )	(46751	EV	30MR1938	C.C3350 )
(46756	EV	27AP1938	0.00168 )	(46761	EV	27MY1938	C.00545 )	(46766	EV	14DE1938	C.C1584 )
( 1236	C* 1	8JN1964	0.00350 )	( 1237	C* 2	8JN1964	C.C0258 )	( 1240	D 6	10JN1964	C.C0460 )
( 1241	E 2	13JN1964	0.00148 )	( 1243	E 6	13JN1964	C.00209 )	( 1440	B 6	11JL1964	C.C1474 )
( 1252	C* 1	16JL1964	C.00279 )	( 1253	C* 2	16JL1964	C.00228 )	( 1254	C 2	15JL1964	C.C0383 )
( 1255	D 5	15JL1964	0.00770 )	( 1256	E 2	14JL1964	0.00183 )	( 1257	E 3	14JL1964	0.00239 )
( 1264	C* 1	10AU1964	0.00965 )	( 1444	B 6	19SE1964	C.00303 )	( 1271	C 7	22SE1964	C.C0653 )
( 1272	C* 1	10SE1964	0.01642 )	( 1277	D 4	18SE1964	C.00620 )	( 1278	D 6	18SE1964	0.00384 )
( 1279	E 1	16SE1964	0.07068 )	( 1284	E 6	17SE1964	C.00635 )	( 1287	F 3	15SE1964	C.C01001 )
( 1288	B 3	15OC1964	C.C0218 )	( 1295	D 4	15OC1964	0.01784 )	( 1297	D 6	14OC1964	C.C0190 )
( 1298	E 1	12OC1964	0.00539 )	( 1300	E 3	13OC1964	C.C0358 )	( 1305	F 2	11OC1964	C.C0173 )
( 1306	F 3	11OC1964	0.00277 )	( 1307	B 6	ND1964	C.00361 )	( 1309	C* 1	10NO1964	C.C0161 )
( 1311	D 1	8NO1964	0.00516 )	( 1313	D 3	9NO1964	C.C0193 )	( 1314	D 4	9NO1964	C.C0287 )
( 1316	D 6	9NO1964	0.00378 )	( 1317	E 1	6NO1964	C.00574 )	( 1318	E 2	7NO1964	C.C0380 )
( 1319	E 3	7NO1964	0.00262 )	( 1320	E 4	7NO1964	0.00207 )	( 1321	E 5	7NO1964	C.C0958 )
( 1323	F 1	6NO1964	0.00139 )	( 1324	F 2	6NO1964	0.00466 )	( 1339	C 5	28MR1967	C.C0312 )
( 1341	A 3	19AP1967	0.00434 )	( 1370	A 6	3MY1967	0.00230 )	( 1416	E 5	28MY1967	C.00437 )
( 1431	A 3	12JN1967	0.00257 )	( 1432	A 4	13JN1967	0.00255 )	( 1433	C 3	17JN1967	C.C1292 )
( 1435	C 7	13JN1967	0.00316 )	( 1438	E 5	14JN1967	C.00726 )	( 1446	A 3	11JL1967	C.C0245 )
( 1447	A 4	11JL1967	0.00234 )	( 1451	C 7	16JL1967	0.00197 )	( 1452	E 2	14JL1967	C.C01277 )
( 1454	E 5	15JL1967	C.C0200 )	( 1532	A 3	18SE1967	0.00657 )	( 1533	A 4	19SE1967	C.C2785 )
( 1534	A 6	19SE1967	0.00620 )	( 1535	C 7	20SE1967	0.01288 )	( 1536	E 2	24SE1967	C.C01091 )
( 1537	E 3	24SE1967	0.01294 )	( 1541	E 2	11OC1967	C.07983 )	( 1542	E 3	11OC1967	C.C02034 )
( 1543	E 5	10OC1967	0.01437 )	( 1554	GS 1	30C1967	0.08539 )	( 1555	GS 2	30C1967	C.C01059 )
( 1556	GS 3	30C1967	0.03650 )	( 1557	GS 4	30C1967	0.02990 )	( 1558	GS 5	4CC1967	0.00793 )
( 1559	GS 7	40C1967	C.01049 )	( 1560	GS 8	40C1967	0.03306 )	( 1561	GS 9	40C1967	C.C00587 )
( 1563	GS11	50C1967	0.00468 )	( 1564	GS12	50C1967	C.00165 )	( 1565	GS13	50C1967	C.C00507 )
( 1566	GS14	50C1967	0.00183 )	( 1569	GS17	50C1967	0.00149 )	( 1571	GS19	60C1967	C.C0059 )
( 1573	GS21	60C1967	0.00112 )	( 1575	GS28	60C1967	0.00129 )	( 1544	MU 1	20C1967	C.16203 )
( 1547	MS 1	20C1967	0.00798 )	( 1546	LU 1	20C1967	C.13005 )	( 1521	SH 1	18SE1967	C.04616 )
( 1522	BH 1	18SE1967	2.56742 )	( 1523	RA 1	19SE1967	0.08303 )	( 1526	MO 1	20SE1967	1.18336 )
( 1527	TR 1	20SE1967	1.00629 )	( 1528	SB 1	20SE1967	0.50534 )	( 1529	KW 1	20SE1967	C.09593 )
( 1530	FR 1	24SE1967	0.10001 )	( 1531	GH 1	25SE1967	0.48183 )	( 1545	WL 1	20C1967	C.C29056 )
( 1548	CA 1	30C1967	0.01272 )	( 1549	MC 1	40C1967	0.10963 )	( 1551	ES 1	50C1967	C.C3994 )
( 1550	MR 1	50C1967	0.61950 )	( 1553	SG 1	60C1967	0.02203 )	( 1428	MU 2	29MY1967	C.53030 )
( 1426	MS 2	29MY1967	0.01050 )	( 1351	MI 2	21AP1967	C.00621 )	( 1427	LU 2	29MY1967	C.02421 )
( 1417	HO 2	22MY1967	0.04860 )	( 1350	BH 2	19AP1967	3.24222 )	( 1401	MO 2	6MY1967	C.C2540 )
( 1402	TR 2	6MY1967	0.08664 )	( 1400	SB 2	6MY1967	1.33429 )	( 1352	KW 2	21AP1967	C.01718 )
( 1354	GH 2	25AP1967	0.01036 )	( 1429	WL 2	29MY1967	0.07432 )	( 1349	CI 2	19AP1967	C.C0359 )
( 1406	GB 2	13MY1967	0.00270 )	( 1419	BU 2	23MY1967	C.01831 )	( 1422	CA 2	23MY1967	C.C1533 )
( 1423	WA 2	25MY1967	0.04710 )								

### *Stephanodiscus tenuis* Hust.

*Stephanodiscus tenuis* Hustedt ex Huber-Pestalozzi, Binnengew., Vol. 16, Teil 2, Hälfte 2, p. 411, pl. 122, fig. 506. 1942.

Cells circular in valve view and rectangular in girdle view. Vegetative cells occur singly or in colonies. Valves of specimens from Lake Michigan 12-25 $\mu$  in diameter without marked depression in the central portion. Radial striae in multiseriate (usually 4-5) fascicles near the margin. The fascicles gradually taper but retain their identity to near the center of the valve. Some of the fascicles become uniseriate and end about one-quarter the valve diameter from the center, others become sinuous and extend to near the center of the valve. The center of the valve is often marked by a small rosette of puncta. The fascicles are separated by narrow, but noticeably



thickened ribs. The spines are small and very regular in their placement, one spine occurring at the end of each interfascicular rib. The spines have apparently thickened bases. Structure of the entire valve fine and difficult to resolve. Puncta in the radial striae fine, about 24-30 in 10 $\mu$ . Fascicles and spines 6-7 in 10 $\mu$  at the margins of the valves.

Because of its small size and fine structure this species is difficult to distinguish from other small species of the genus, especially *S. hantzschii*, unless considerable care is exercised. In structure it most resembles *S. transilvanicus* but it is easily distinguished from that species by its smaller size range and much finer structure.

644 SITENUIS ICI NO OF STATIONS 190

( 3507	CH	19FE1881	0.01132 )	( 46915	GH	20FE1946	0.01707 )	( 46914	CH	19AP1946	1.14465 )
( 46924	CH	10MY1946	0.27513 )	( 46923	CH	22NO1946	0.00656 )	( 46905	CH	JA1947	0.00123 )
( 46909	CH	MR1947	0.03643 )	( 46912	CH	AP1947	0.01150 )	( 46916	CH	4MY1947	0.00645 )
( 46906	CH	MY1947	0.14336 )	( 46919	CH	5JN1947	0.00152 )	( 46922	CH	21AU1947	0.00048 )
( 46772	EV	18AP1938	0.02839 )	( 46756	EV	27AP1938	0.23507 )	( 46761	EV	27MY1938	0.00818 )
( 1225	C 6	15MY1964	0.01568 )	( 1226	C 7	16MY1964	0.04947 )	( 1227	C* 2	13MY1964	0.00219 )
( 1228	D 2	14MY1964	0.00584 )	( 1229	D 5	14MY1964	0.00846 )	( 1230	E 2	16MY1964	0.05927 )
( 1231	E 3	16MY1964	0.00245 )	( 1234	B 3	18JN1964	0.00562 )	( 1235	C 7	16JN1964	0.05649 )
( 1439	B 6	5JN1964	0.03596 )	( 1237	C* 2	8JN1964	0.01805 )	( 1240	D 6	10JN1964	0.00460 )
( 1241	E 2	13JN1964	0.00296 )	( 1243	E 6	13JN1964	0.01253 )	( 1244	F 1	11JN1964	0.00219 )
( 1440	B 6	11JL1964	0.01843 )	( 1441	B 6	24JL1964	0.00661 )	( 1249	C 3	8JL1964	0.00543 )
( 1250	C 6	10JL1964	0.16032 )	( 1251	C 7	16JL1964	0.00290 )	( 1252	C* 1	16JL1964	0.00558 )
( 1253	C* 2	16JL1964	0.00228 )	( 1254	D 2	15JL1964	0.00575 )	( 1255	D 5	15JL1964	0.00310 )
( 1256	E 2	14JL1964	0.00733 )	( 1257	E 3	14JL1964	0.00239 )	( 1258	F 1	6JL1964	0.00472 )
( 1442	B 6	2AU1964	0.00341 )	( 1264	C* 1	10AU1964	0.00193 )	( 1271	C 7	22SE1964	0.01306 )
( 1272	C* 1	10SE1964	0.02463 )	( 1273	C* 2	10SE1964	0.01075 )	( 1274	D 1	17SE1964	0.00469 )
( 1277	D 4	18SE1964	0.00620 )	( 1278	D 6	18SE1964	0.00769 )	( 1284	E 6	17SE1964	0.00318 )
( 1289	C 7	14OC1964	0.00440 )	( 1290	C* 1	16OC1964	0.00379 )	( 1293	D 2	15OC1964	0.00472 )
( 1255	D 4	15OC1964	0.00595 )	( 1297	D 6	14OC1964	0.00952 )	( 1301	E 4	13OC1964	0.00442 )
( 1302	E 5	13OC1964	0.00405 )	( 1304	F 1	11OC1964	0.00247 )	( 1305	F 2	11OC1964	0.00713 )
( 1306	F 3	11OC1964	0.00277 )	( 1307	B 6	NO1964	0.00361 )	( 1309	C* 1	10NO1964	0.00161 )
( 1311	D 1	8NO1964	0.00774 )	( 1316	D 6	9NO1964	0.00378 )	( 1320	E 4	7NO1964	0.00207 )
( 1336	C 3	27JA1967	0.00193 )	( 1337	C 3	28MR1967	0.89067 )	( 1338	C 3	28MR1967	0.46676 )
( 1339	C 5	28MR1967	0.05300 )	( 1340	C 7	28MR1967	1.27255 )	( 1341	A 3	19AP1967	0.49358 )
( 1342	A 4	19AP1967	0.16422 )	( 1343	A 6	19AP1967	2.91790 )	( 1344	C 3	25AP1967	0.00993 )
( 1345	C 5	25AP1967	0.00780 )	( 1346	C 7	21AP1967	0.93467 )	( 1347	E 2	23AP1967	0.08129 )
( 1348	E 5	23AP1967	1.24742 )	( 1368	A 3	4MY1967	0.05655 )	( 1369	A 4	4MY1967	0.01118 )
( 1370	A 6	3MY1967	0.07366 )	( 1371	C 3	4MY1967	0.00231 )	( 1372	C 5	5MY1967	0.00355 )
( 1374	E 2	7MY1967	0.02391 )	( 1376	E 5	6MY1967	0.00281 )	( 1408	A 3	23MY1967	0.00447 )
( 1416	E 5	28MY1967	0.27772 )	( 1431	A 3	12JN1967	0.01287 )	( 1432	A 4	13JN1967	0.02044 )
( 1433	C 3	17JN1967	0.03875 )	( 1434	C 5	17JN1967	0.00897 )	( 1435	C 7	13JN1967	0.05683 )
( 1438	E 5	14JN1967	0.00363 )	( 1448	A 6	10JL1967	0.01061 )	( 1451	C 7	16JL1967	0.02129 )
( 1452	E 2	14JL1967	0.01064 )	( 1511	E 2	15E1967	0.00307 )	( 1532	A 3	18SE1967	0.00986 )
( 1533	A 4	19SE1967	0.14855 )	( 1534	A 6	19SE1967	0.02172 )	( 1535	C 7	20SE1967	0.00322 )
( 1536	E 2	24SE1967	0.03545 )	( 1537	E 3	24SE1967	0.01294 )	( 1538	E 5	23SE1967	0.02210 )
( 1539	C 3	4OC1967	0.01006 )	( 1540	C 5	4OC1967	0.00496 )	( 1541	E 2	11OC1967	0.02661 )
( 1542	E 3	11OC1967	0.00509 )	( 1543	E 5	10OC1967	0.01437 )	( 1380	ES 4	9MY1967	0.00336 )
( 1384	GS 8	10MY1967	0.00185 )	( 1385	GS 9	10MY1967	0.01177 )	( 1386	GS10	12MY1967	0.00862 )
( 1389	GS13	12MY1967	0.00516 )	( 1390	GS14	12MY1967	0.01174 )	( 1391	GS15	12MY1967	0.02873 )
( 1392	GS16	12MY1967	0.11095 )	( 1393	GS17	13MY1967	0.02465 )	( 1394	GS18	13MY1967	0.05505 )
( 1395	GS19	13MY1967	0.45212 )	( 1396	GS20	13MY1967	0.17683 )	( 1397	GS21	13MY1967	1.55664 )
( 1398	GS22	14MY1967	0.00607 )	( 1555	GS 2	3OC1967	0.00353 )	( 1556	GS 3	3OC1967	0.01043 )
( 1557	GS 4	3OC1967	0.00747 )	( 1559	GS 7	4OC1967	0.00350 )	( 1560	GS 8	4OC1967	0.00945 )
( 1562	GS10	5OC1967	0.00493 )	( 1564	GS12	5OC1967	0.00329 )	( 1565	GS13	5OC1967	0.01014 )
( 1566	GS14	5OC1967	0.00734 )	( 1567	GS15	5OC1967	0.00476 )	( 1568	GS16	5OC1967	0.00433 )
( 1569	GS17	5OC1967	0.00149 )	( 1571	GS19	6OC1967	0.00176 )	( 1572	GS20	6OC1967	0.00451 )
( 1573	GS21	6OC1967	0.03136 )	( 1574	GS22	6OC1967	0.00575 )	( 1575	GS28	6OC1967	0.00645 )
( 1544	MU 1	2OC1967	0.24067 )	( 1547	MS 1	2OC1967	0.00798 )	( 1524	MI 1	20SE1967	0.08757 )
( 1546	LU 1	2OC1967	1.20042 )	( 1520	HO 1	18SE1967	0.01886 )	( 1521	SH 1	18SE1967	0.32887 )
( 1522	BH 1	18SE1967	13.88742 )	( 1523	RA 1	19SE1967	0.26753 )	( 1525	PW 1	20SE1967	0.01393 )
( 1526	MO 1	20SE1967	0.21619 )	( 1527	TR 1	20SE1967	0.06918 )	( 1528	SB 1	20SE1967	0.17326 )
( 1529	KW 1	20SE1967	0.01199 )	( 1530	FR 1	24SE1967	0.11001 )	( 1531	GH 1	25SE1967	0.03381 )
( 1545	WL 1	2OC1967	0.13514 )	( 1548	CA 1	3OC1967	0.02544 )	( 1549	MQ 1	4OC1967	0.02741 )
( 1551	ES 1	5OC1967	0.00799 )	( 1552	SW 1	6OC1967	0.01981 )	( 1550	MR 1	5OC1967	0.11151 )
( 1553	SG 1	6OC1967	0.02203 )	( 1428	MU 2	29MY1967	1.10880 )	( 1426	MS 2	29MY1967	5.37533 )
( 1351	MI 2	21AP1967	8.68891 )	( 1427	LU 2	29MY1967	0.13317 )	( 1417	PO 2	22MY1967	5.02467 )
( 1418	SH 2	22MY1967	0.07776 )	( 1350	BH 2	19AP1967	5.14526 )	( 1425	RA 2	25MY1967	1.69746 )
( 1399	PW 2	5MY1967	0.29924 )	( 1401	MO 2	6MY1967	1.31703 )	( 1402	TR 2	6MY1967	1.05047 )
( 1400	SB 2	6MY1967	0.60162 )	( 1352	KW 2	21AP1967	0.51538 )	( 1353	FR 2	23AP1967	5.23207 )
( 1354	GH 2	25AP1967	12.42772 )	( 1429	WL 2	29MY1967	2.88778 )	( 1404	MQ 2	10MY1967	0.02541 )
( 1405	ES 2	12MY1967	0.16125 )	( 1407	SM 2	14MY1967	0.50158 )	( 1349	CI 2	19AP1967	5.80501 )
( 1406	GB 2	13MY1967	0.06739 )	( 1419	BU 2	23MY1967	0.18308 )	( 1420	IH 2	23MY1967	0.24169 )
( 1421	CH 2	23MY1967	0.27758 )	( 1422	GA 2	23MY1967	0.43938 )	( 1423	HA 2	25MY1967	3.35717 )
( 1424	KN 2	25MY1967	0.98588 )	(							

# *Stephanodiscus transilvanicus* Pant.

*Stephanodiscus transilvanicus* Pantocsek, Beitr. Kenntn. Foss. Bacill. Ungarns, p. 96, Beitr. III, pl. 8, fig. 125. 1905.

*Stephanodiscus astraea* var. *intermedia* Fricke in: A. Schmidt's Atlas Diat., pl. 225, figs. 37-39. 1901.

*Stephanodiscus astra* var. *transilvanica* Fricke in: A. Schmidt's Atlas Diat., pl. 226, figs. 2-22. 1901.

*Stephanodiscus astra* var. *multipunctata* Fricke in: A. Schmidt's Atlas Diat., pl. 226, figs. 23-24. 1901.

Cells circular in valve view and rectangular in girdle view. Vegetative cells always occur singly. Valves of specimens from Lake Michigan 14-60 $\mu$  in diameter, with markedly concave center. Radial striae in multiseriate (usually 4-6) at the margins, fascicles becoming uniseriate and, eventually, disorganized as they approach the sunken center portion of the valve. Puncta in the radial striae usually fine but irregular in size and placement, 14-20 in 10 $\mu$ . The fascicles are separated by quite wide and markedly thickened radial ribs. The spines are regularly placed in this species and one spine usually occurs at the end of each rib. A narrow marginal zone of fine, irregularly arranged, puncta is present in the larger individuals and the ribs and spines extend into this zone. In smaller specimens this feature is not apparent in valve view due to the accentuated contour of the valve. Fascicles and spines 3-5 in 10 $\mu$  at the margins of the valves.

Although the only reports of this species from Lake Michigan are those of Skvortzow (1937), it is the most abundant large member of the genus in the offshore plankton at the present time and is abundant in collections dating back to 1876.

645 SITRANSI ICT NO OF STATIONS 290

( 60973 )	CH	1876	3.47189 )	( 3540	CH	11MY1879	0.47524 )	( 3541	CH	1FE1881	1.59444 )
( 3507 )	CH	19FE1881	3.27168 )	( 46910	CH	OC1945	0.00109 )	( 46921	CH	23NO1945	0.00841 )
( 46917 )	CH	12JA1946	0.09898 )	( 46915	CH	20FE1946	0.26177 )	( 46914	CH	19AP1946	1.07524 )
( 46924 )	CH	10MY1946	0.55026 )	( 46923	CH	22NO1946	0.01748 )	( 46920	CH	20DE1946	0.01695 )
( 46905 )	CH	JA1947	0.11398 )	( 46909	CH	MR1947	0.59196 )	( 46912	CH	AP1947	C.13798 )
( 46916 )	CH	4MY1947	0.03325 )	( 46906	CH	MY1947	0.12942 )	( 46919	CH	5JN1947	C.08194 )
( 46907 )	CH	JL1947	0.44873 )	( 46913	CH	6AU1947	0.01046 )	( 46922	CH	21AU1947	C.05767 )
( 46758 )	EV	5JN1937	0.66329 )	( 46771	EV	11JN1937	0.37326 )	( 46743	EV	20JN1937	C.21838 )
( 46745 )	EV	3JL1937	0.08359 )	( 46764	EV	17JL1937	0.12893 )	( 46757	EV	25JL1937	C.1C110 )
( 46747 )	EV	1AU1937	0.01485 )	( 46763	EV	23AU1937	C.02029 )	( 46769	EV	7SE1937	0.04342 )
( 46752 )	EV	15SE1937	0.02177 )	( 46744	EV	6OC1937	0.00975 )	( 46748	EV	13OC1937	C.38429 )
( 46767 )	EV	27OC1937	0.00774 )	( 46749	EV	12MR1938	0.19420 )	( 46768	EV	16MR1938	C.10290 )
( 46762 )	EV	18MR1938	0.06617 )	( 46751	EV	30MR1938	0.05583 )	( 46772	EV	18AP1938	C.12775 )
( 46756 )	EV	27AP1938	0.14776 )	( 46759	EV	19MY1938	0.29710 )	( 46761	EV	27MY1938	C.11719 )
( 1223 )	B 3	18MY1964	0.02188 )	( 1224	B 4	18MY1964	0.10195 )	( 1225	C 6	15MY1964	C.05880 )
( 1226 )	C 7	16MY1964	0.05327 )	( 1227	C* 2	13MY1964	C.04935 )	( 1228	D 2	14MY1964	C.23161 )
( 1229 )	D 5	14MY1964	0.26855 )	( 1230	E 2	16MY1964	0.05038 )	( 1231	E 3	16MY1964	C.85608 )
( 1232 )	E 5	16MY1964	0.79133 )	( 1233	B 3	5JN2964	0.03096 )	( 1234	B 3	18JN1964	0.00281 )
( 1235 )	C 7	16JN1964	0.01130 )	( 1439	B 6	5JN1964	0.02198 )	( 1236	C* 1	8JN1964	C.01750 )
( 1237 )	C* 2	8JN1964	0.03351 )	( 1238	D 3	11JN1964	C.25400 )	( 1239	D 4	11JN1964	C.02785 )
( 1240 )	D 6	10JN1964	0.08130 )	( 1241	E 2	13JN1964	0.56924 )	( 1242	E 3	13JN1964	C.41963 )
( 1243 )	E 6	13JN1964	0.22551 )	( 1244	F 1	11JN1964	0.08114 )	( 1245	F 2	11JN1964	C.22128 )
( 1246 )	F 3	11JN1964	0.20319 )	( 1247	B 3	14JL1964	0.00427 )	( 1248	B 3	24JL1964	C.00985 )
( 1440 )	B 6	11JL1964	0.01106 )	( 1441	B 6	24JL1964	0.03745 )	( 1249	C 3	8JL1964	C.00272 )
( 1250 )	C 6	10JL1964	0.02878 )	( 1251	C 7	16JL1964	0.01738 )	( 1252	C* 1	16JL1964	C.00837 )
( 1253 )	C* 2	16JL1964	0.04108 )	( 1254	D 2	15JL1964	0.18004 )	( 1255	D 5	15JL1964	C.18993 )
( 1256 )	E 2	14JL1964	0.13556 )	( 1257	F 3	14JL1964	C.50245 )	( 1258	F 1	6JL1964	C.30441 )
( 1259 )	F 2	6JL1964	0.16423 )	( 1260	F 3	6JL1964	0.14134 )	( 1261	B 3	2AU1964	0.00196 )
( 1262 )	B 3	17AU1964	0.02310 )	( 1442	B 6	2AU1964	0.00682 )	( 1443	B 6	16AU1964	0.00198 )
( 1263 )	C 7	15AU1964	0.00400 )	( 1264	C* 1	10AU1964	0.00579 )	( 1265	C* 2	10AU1964	0.00671 )
( 1266 )	D 3	18AU1964	0.05963 )	( 1268	E 2	15AU1964	C.20243 )	( 1269	E 3	15AU1964	C.76742 )
( 1270 )	F 1	10AU1964	0.01361 )	( 1444	B 6	19SE1964	0.04244 )	( 1271	C 7	22SE1964	0.01959 )
( 1273 )	C* 2	10SE1964	0.02688 )	( 1274	D 1	17SE1964	0.01408 )	( 1275	D 2	17SE1964	C.1290 )
( 1276 )	D 3	18SE1964	0.02235 )	( 1278	D 6	18SE1964	0.01153 )	( 1280	E 2	16SE1964	0.03404 )
( 1281 )	E 3	16SE1964	0.16482 )	( 1282	E 4	16SE1964	0.02216 )	( 1283	E 5	16SE1964	C.12872 )
( 1284 )	E 6	17SE1964	0.00953 )	( 1285	F 1	15SE1964	0.05241 )	( 1286	F 2	15SE1964	C.01095 )
( 1287 )	F 3	15SE1964	0.01001 )	( 1445	B 6	14OC1964	0.00326 )	( 1289	C 7	14OC1964	C.15391 )
( 1290 )	C* 1	16OC1964	0.01137 )	( 1291	C* 2	16OC1964	C.00734 )	( 1293	D 2	15OC1964	C.00943 )
( 1294 )	D 3	15OC1964	0.06593 )	( 1295	D 4	15OC1964	0.08324 )	( 1296	D 5	14OC1964	0.02754 )
( 1297 )	D 6	14OC1964	0.02666 )	( 1298	E 1	12OC1964	C.01885 )	( 1299	E 2	12OC1964	0.01257 )
( 1300 )	E 3	13OC1964	0.11455 )	( 1301	E 4	13OC1964	0.18546 )	( 1302	E 5	13OC1964	0.04454 )
( 1303 )	E 6	13OC1964	0.02799 )	( 1304	F 1	11OC1964	0.00247 )	( 1305	F 2	11OC1964	C.00518 )
( 1306 )	F 3	11OC1964	0.00554 )	( 1307	B 6	NO1964	0.00361 )	( 1308	C 7	6NO1964	0.01521 )
( 1309 )	C* 1	10NO1964	0.00322 )	( 1310	C* 2	9NO1964	C.00454 )	( 1311	D 1	8NO1964	C.00258 )
( 1312 )	D 2	8NO1964	0.00621 )	( 1313	D 3	9NO1964	C.09653 )	( 1314	D 4	9NO1964	C.04019 )
( 1315 )	D 5	9NO1964	0.03185 )	( 1317	E 1	6NO1964	0.00574 )	( 1318	E 2	7NO1964	C.08181 )
( 1319 )	E 3	7NO1964	0.18328 )	( 1320	E 4	7NO1964	0.05584 )	( 1321	E 5	7NO1964	C.02873 )
( 1322 )	E 6	7NO1964	0.03666 )	( 1323	F 1	6NO1964	0.00279 )	( 1324	F 2	6NO1964	C.13398 )
( 1325 )	F 3	6NO1964	0.00756 )	( 1336	C 3	27JA1967	0.01540 )	( 1337	C 3	2MR1967	0.08671 )
( 1338 )	C 3	28MR1967	1.42011 )	( 1339	C 5	28MR1967	2.07333 )	( 1340	C 7	28MR1967	C.16580 )
( 1341 )	A 3	19AP1967	0.18225 )	( 1342	A 4	19AP1967	0.50530 )	( 1343	A 6	19AP1967	C.21120 )
( 1344 )	C 3	25AP1967	0.28952 )	( 1345	C 5	25AP1967	1.77378 )	( 1346	C 7	21AP1967	C.23367 )
( 1347 )	E 2	23AP1967	1.36574 )	( 1348	E 5	23AP1967	0.24400 )	( 1368	A 3	4MY1967	1.97926 )
( 1369 )	A 4	4MY1967	5.47915 )	( 1370	A 6	3MY1967	C.21637 )	( 1371	C 3	4MY1967	1.93915 )
( 1372 )	C 5	5MY1967	6.45482 )	( 1373	C 7	5MY1967	2.59570 )	( 1374	E 2	7MY1967	2.30126 )
( 1375 )	E 3	7MY1967	0.84218 )	( 1376	E 5	6MY1967	C.78705 )	( 1408	A 3	23MY1967	1.56508 )

( 1409	A 4	23MY1967	0.41659 )	( 1410	A 6	24MY1967	1.18403 )	( 1411	C 3	31MY1967	C.96008 )
( 1412	C 5	31MY1967	2.35710 )	( 1413	C 7	25MY1967	2.43232 )	( 1414	E 2	28MY1967	1.41058 )
( 1415	E 3	28MY1967	0.94437 )	( 1416	E 5	28MY1967	0.20556 )	( 1431	A 3	12JN1967	C.36048 )
( 1432	A 4	13JN1967	4.11260 )	( 1433	C 3	17JN1967	1.13034 )	( 1434	C 5	17JN1967	3.76839 )
( 1435	C 7	13JN1967	0.59988 )	( 1436	E 2	15JN1967	6.33232 )	( 1437	E 3	15JN1967	4.33343 )
( 1438	E 5	14JN1967	1.52505 )	( 1446	A 3	11JL1967	0.01468 )	( 1447	A 4	11JL1967	C.16373 )
( 1448	A 6	10JL1967	0.02476 )	( 1449	C 3	16JL1967	1.73870 )	( 1450	C 5	16JL1967	1.73284 )
( 1451	C 7	16JL1967	0.01181 )	( 1452	E 2	14JL1967	0.27036 )	( 1453	E 3	15JL1967	2.47706 )
( 1454	E 5	15JL1967	0.01600 )	( 1504	A 3	28AU1967	0.00988 )	( 1508	C 3	25E1967	0.01998 )
( 1509	C 5	25E1967	0.47441 )	( 1510	C 7	29AU1967	0.00316 )	( 1511	E 2	15E1967	C.42975 )
( 1512	E 3	15E1967	1.46851 )	( 1513	E 5	31AU1967	0.06588 )	( 1533	A 4	19SE1967	C.00464 )
( 1536	E 2	24SE1967	0.03817 )	( 1537	E 3	24SE1967	4.22669 )	( 1538	E 5	23SE1967	C.45849 )
( 1540	C 5	40C1967	0.00496 )	( 1541	E 2	11OC1967	0.02129 )	( 1542	E 3	11OC1967	1.77990 )
( 1543	E 5	10OC1967	0.01437 )	( 1377	GS 1	9MY1967	1.01326 )	( 1378	GS 2	9MY1967	C.24810 )
( 1379	GS 3	9MY1967	0.36828 )	( 1380	GS 4	9MY1967	0.28754 )	( 1381	GS 5	10MY1967	C.25998 )
( 1382	GS 6	10MY1967	0.64948 )	( 1383	GS 7	10MY1967	0.15237 )	( 1384	GS 8	10MY1967	C.47324 )
( 1385	GS 9	10MY1967	0.06357 )	( 1386	GS10	12MY1967	0.43953 )	( 1387	GS11	12MY1967	C.15447 )
( 1388	GS12	12MY1967	0.04223 )	( 1389	GS13	12MY1967	0.01289 )	( 1390	GS14	12MY1967	0.04698 )
( 1391	GS15	12MY1967	0.16760 )	( 1392	GS16	12MY1967	0.05548 )	( 1393	GS17	13MY1967	C.04931 )
( 1394	GS18	13MY1967	0.60206 )	( 1395	GS19	13MY1967	0.09864 )	( 1396	GS20	13MY1967	C.00592 )
( 1397	GS21	13MY1967	0.00523 )	( 1398	GS22	14MY1967	0.19431 )	( 1554	GS 1	30C1967	C.01423 )
( 1555	GS 2	30C1967	0.00706 )	( 1557	GS 4	30C1967	0.01121 )	( 1558	GS 5	40C1967	C.00396 )
( 1559	GS 7	40C1967	0.01399 )	( 1562	GS10	50C1967	0.00493 )	( 1563	GS11	50C1967	0.00701 )
( 1566	GS14	50C1967	0.00183 )	( 1567	GS15	50C1967	0.07780 )	( 1568	GS16	50C1967	C.01154 )
( 1569	GS17	50C1967	0.58865 )	( 1570	GS18	50C1967	0.33717 )	( 1571	GS19	60C1967	C.00351 )
( 1572	GS20	60C1967	0.00180 )	( 1573	GS21	60C1967	0.03920 )	( 1574	GS22	60C1967	0.01438 )
( 1575	GS28	60C1967	0.01677 )	( 1544	MU 1	20C1967	0.00477 )	( 1546	LU 1	20C1967	C.07503 )
( 1520	HO 1	18SE1967	0.02357 )	( 1521	SH 1	18SE1967	0.01731 )	( 1526	MO 1	20SE1967	C.04551 )
( 1527	TR 1	20SE1967	0.00629 )	( 1528	SB 1	20SE1967	0.05775 )	( 1529	KW 1	20SE1967	C.02398 )
( 1545	WL 1	20C1967	0.08784 )	( 1548	CA 1	30C1967	0.01272 )	( 1551	ES 1	50C1967	C.00799 )
( 1552	SM 1	60C1967	0.00660 )	( 1550	MR 1	50C1967	0.06195 )	( 1553	SG 1	60C1967	0.03672 )
( 1428	MO 2	29MY1967	0.04821 )	( 1426	MS 2	29MY1967	0.88189 )	( 1351	MI 2	21AP1967	C.20171 )
( 1427	LU 2	29MY1967	3.48668 )	( 1417	HO 2	22MY1967	0.22432 )	( 1418	SH 2	22MY1967	C.04666 )
( 1350	BH 2	19AP1967	0.01542 )	( 1425	RA 2	25MY1967	0.22102 )	( 1399	PW 2	5MY1967	0.42845 )
( 1401	MO 2	6MY1967	0.28222 )	( 1402	TR 2	6MY1967	0.34113 )	( 1400	SB 2	6MY1967	0.75054 )
( 1352	KW 2	21AP1967	0.08590 )	( 1353	FR 2	23AP1967	C.21097 )	( 1354	GH 2	25AP1967	C.04143 )
( 1429	WL 2	29MY1967	0.98737 )	( 1403	CA 2	10MY1967	1.42540 )	( 1404	MQ 2	10MY1967	0.07622 )
( 1405	ES 2	12MY1967	0.14190 )	( 1407	SM 2	14MY1967	0.04777 )	( 1349	CI 2	15AP1967	C.04670 )
( 1406	FB 2	13MY1967	0.00270 )	( 1419	BU 2	23MY1967	0.16477 )	( 1420	IH 2	23MY1967	C.09063 )
( 1421	CH 2	23MY1967	0.26024 )	( 1422	GA 2	23MY1967	0.19414 )	( 1423	WA 2	25MY1967	0.35970 )
( 1424	KN 2	25MY1967	0.26645 )	( 1430	MC 2	12JN1967	0.02467 )	(			

## Species incertae sedis

### Stephanodiscus sp. #5.

646 STSPECOE TOT NO OF STATIONS 135

(46917	CH	12JA1966	0.00028 )	(46915	CH	20FE1966	0.03414 )	(46914	CH	19AP1966	0.00961 )
(46924	CH	10MY1966	0.00071 )	(46923	CH	22NO1966	0.00437 )	(46909	CH	MR1967	0.18669 )
(46916	CH	4MY1967	0.00102 )	(46906	CH	MY1967	C.02057 )	(46915	CH	5JN1967	C.00455 )
(46922	CH	21AU1967	0.00048 )	(46758	EV	5JN1937	0.00357 )	(46756	EV	27AP1938	C.00672 )
(46761	EV	27MY1938	0.00545 )	(1223	B 3	18MY1964	0.00156 )	(1224	B 4	18MY1964	C.00588 )
(1225	C 6	15MY1964	0.00392 )	(1226	C 7	16MY1964	0.00381 )	(1227	C* 2	12MY1964	C.00439 )
(1228	D 2	14MY1964	0.00973 )	(1229	D 5	14MY1964	0.03595 )	(1230	E 2	16MY1964	C.04149 )
(1231	E 3	16MY1964	0.01712 )	(1232	E 5	16MY1964	0.02261 )	(1233	B 3	5JN1964	C.04287 )
(1234	B 3	18JN1964	0.00843 )	(1235	C 2	16JN1964	0.00847 )	(1439	B 6	5JN1964	C.04965 )
(1236	C* 1	8JN1964	0.00350 )	(1237	C* 2	8JN1964	C.15210 )	(1238	D 3	11JN1964	C.06400 )
(1239	D 4	11JN1964	0.00116 )	(1240	D 6	10JN1964	0.01994 )	(1241	E 2	13JN1964	C.10941 )
(1242	E 3	13JN1964	0.00300 )	(1243	E 6	13JN1964	0.02297 )	(1244	F 1	11JN1964	0.00439 )
(1245	F 2	11JN1964	0.02420 )	(1246	F 3	11JN1964	0.05379 )	(1248	B 3	24JL1964	C.00591 )
(1440	B 6	11JL1964	0.29849 )	(1441	B 6	24JL1964	C.20705 )	(1249	C 3	8JL1964	C.00272 )
(1250	C 6	10JL1964	0.69065 )	(1251	C 7	16JL1964	0.00579 )	(1252	C* 1	16JL1964	C.00837 )
(1253	C* 2	16JL1964	0.02054 )	(1254	D 2	15JL1964	C.29496 )	(1255	D 5	15JL1964	1.25764 )
(1256	E 2	14JL1964	0.51293 )	(1257	E 3	14JL1964	0.17705 )	(1258	F 1	6JL1964	C.05899 )
(1259	F 2	6JL1964	0.09606 )	(1260	F 3	6JL1964	C.03438 )	(1261	B 3	2AU1964	C.00392 )
(1262	B 3	17AU1964	0.00630 )	(1442	B 6	2AU1964	0.09894 )	(1443	B 6	16AU1964	C.00395 )
(1264	C* 1	10AU1964	0.00772 )	(1265	C* 2	10AU1964	0.00894 )	(1266	D 3	18AU1964	0.45250 )
(1268	E 2	15AU1964	0.70300 )	(1269	E 3	15AU1964	0.34534 )	(1270	F 1	10AU1964	C.00817 )
(1444	B 6	19SE1964	0.00303 )	(1273	C* 2	10SE1964	0.00538 )	(1275	D 2	17SE1964	0.00645 )
(1277	D 4	18SE1964	0.01239 )	(1279	E 1	16SE1964	0.01178 )	(1280	E 2	16SE1964	C.00681 )
(1281	E 3	16SE1964	0.00785 )	(1283	E 5	16SE1964	0.00613 )	(1285	F 1	15SE1964	C.01747 )
(1294	D 3	15OC1964	0.00330 )	(1295	D 4	15OC1964	0.01784 )	(1297	D 6	14CC1964	C.00190 )
(1299	E 2	12OC1964	0.00628 )	(1300	E 3	13OC1964	0.01432 )	(1301	E 4	13OC1964	C.01325 )
(1302	E 5	13OC1964	0.00405 )	(1305	F 2	11OC1964	C.00345 )	(1307	B 6	ND1964	0.00361 )
(1318	E 2	7ND1964	0.00951 )	(1319	E 3	7ND1964	0.01047 )	(1320	E 4	7ND1964	C.00827 )
(1336	C 3	27JA1967	0.00193 )	(1337	C 3	2MR1967	0.00441 )	(1338	C 3	28MR1967	C.01851 )
(1339	C 5	28MR1967	0.00935 )	(1340	C 7	28MR1967	0.00509 )	(1341	A 3	19AP1967	C.00976 )
(1342	A 4	19AP1967	0.00361 )	(1343	A 6	19AP1967	0.00278 )	(1345	C 5	25AP1967	0.00780 )
(1346	C 7	21AP1967	0.05608 )	(1347	E 2	23AP1967	0.00488 )	(1348	E 5	23AP1967	C.00548 )
(1369	A 4	4MY1967	0.00373 )	(1373	C 7	5MY1967	0.00285 )	(1374	E 2	7MY1967	C.00897 )
(1408	A 3	23MY1967	0.00894 )	(1412	C 5	31MY1967	0.00842 )	(1432	A 4	13JN1967	C.00511 )
(1433	C 3	17JN1967	0.07105 )	(1434	C 5	17JN1967	0.00299 )	(1438	E 5	14JN1967	0.00363 )
(1446	A 3	11JL1967	0.00489 )	(1447	A 4	11JL1967	0.00468 )	(1449	C 3	16JL1967	C.34774 )
(1450	C 5	16JL1967	0.02666 )	(1452	E 2	14JL1967	0.03193 )	(1453	E 3	15JL1967	C.04297 )
(1454	E 5	15JL1967	0.00400 )	(1511	E 2	15E1967	0.01842 )	(1512	E 3	15E1967	0.01178 )
(1513	E 5	31AU1967	0.00507 )	(1536	E 2	24SE1967	0.00273 )	(1537	E 3	24SE1967	0.01294 )
(1538	E 5	23SE1967	0.01105 )	(1542	E 3	11OC1967	C.04068 )	(1378	GS 2	9MY1967	C.00421 )
(1379	GS 3	9MY1967	0.00309 )	(1383	GS 7	10MY1967	0.00267 )	(1384	GS 8	10MY1967	C.00370 )
(1386	GS10	12MY1967	0.00287 )	(1387	GS11	12MY1967	0.00396 )	(1389	GS13	12MY1967	C.00258 )
(1392	GS16	12MY1967	0.00308 )	(1398	GS22	14MY1967	0.00304 )	(1524	MI 1	20SE1967	C.02189 )
(1522	BH 1	18SE1967	1.16701 )	(1549	MQ 1	40C1967	0.01370 )	(1400	SB 2	6MY1967	C.00596 )
(1352	KW 2	21AP1967	0.09449 )	(1429	WL 2	29MY1967	0.01062 )	(1423	WA 2	25MY1967	C.02141 )

*Stephanodiscus* sp. #10.

649 STSPECCJ TCT NO OF STATIONS 22

(46914	CH	19AP1946	0.01708 )	(46524	CH	10MY1946	0.00494 )	(46923	CH	22NO1946	0.00656 )
(46909	CH	MR1947	0.00911 )	(46506	CH	MY1947	0.01327 )	(46919	CH	5JN1947	0.01214 )
(46758	EV	5JN1937	0.00713 )	(46743	EV	20JN1937	0.01285 )	(46757	EV	25JL1937	0.00963 )
(46750	EV	24SE1937	0.00471 )	( 1255	D 5	15JL1964	0.00513 )	( 1256	E 2	14JL1964	0.00733 )
( 1257	E 3	14JL1964	0.00957 )	( 1258	F 1	6JL1964	0.00472 )	( 1259	F 2	6JL1964	0.00310 )
( 1260	F 3	6JL1964	0.00191 )	( 1284	E 6	17SE1964	0.00318 )	( 1337	C 3	2MR1967	0.00294 )
( 1347	E 2	23AP1967	0.00325 )	( 1436	E 2	15JN1967	0.00362 )	( 1453	E 3	15JL1967	0.01264 )
( 1541	E 2	11CC1967	0.02661 )	(							

650 STSPECCJ TCT NO OF STATIONS 2

(46507	CH	JL1947	0.00197 )	( 1250	C 6	10JL1964	0.00411 )	(			
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Genus *Surirella* Turp.

Turpin, Mem. Mus. Hist. Nat. (Paris), 16:361. 1828.

Although the majority of freshwater members of the genus *Surirella* find their primary habitat in benthic communities, many are successful facultative planktonts. Plankton collections from Lake Michigan, especially those from nearshore areas, often contain representatives of the genus, usually in low numbers.

*Surirella angusta* Kütz.

*Surirella angusta* Kützing, Bacill., p. 61, pl. 30, fig. 52. 1844.

651 SUANGUST TCT NO OF STATIONS 162

(60973	CH	1876	0.11809 )	( 3540	CH	11MY1875	0.02796 )	( 3507	CH	19FE1881	0.04528 )
(46921	CH	23NO1945	0.00776 )	(46517	CH	12JA1946	0.00749 )	(46915	CH	20FE1946	0.01138 )
(46914	CH	19AP1946	0.04698 )	(46924	CH	10MY1946	0.02540 )	(46923	CH	22NO1946	0.01311 )
(46920	CH	20CE1946	0.01109 )	(46505	CH	JA1947	0.01716 )	(46909	CH	MR1947	0.00375 )
(46916	CH	4MY1947	0.01492 )	(46506	CH	MY1947	0.02920 )	(46919	CH	5JN1947	0.03945 )
(46907	CH	JL1947	0.01085 )	(46522	CH	21AL1947	0.02666 )	(46758	EV	5JN1937	0.05970 )
(46771	EV	11JN1937	0.01426 )	(46743	EV	20JN1937	0.02846 )	(46745	EV	3JL1937	0.02090 )
(46770	EV	9JL1937	0.01789 )	(46764	EV	17JL1937	0.32232 )	(46757	EV	25JL1937	0.03370 )
(46747	EV	1AU1937	0.15348 )	(46763	EV	23AU1937	0.04058 )	(46765	EV	30AU1937	0.00558 )
(46750	EV	24SE1937	0.01885 )	(46744	EV	6OC1937	0.01463 )	(46748	EV	13OC1937	0.02135 )
(46749	EV	12MR1938	0.01214 )	(46762	EV	18MR1938	0.02206 )	(46772	EV	18AP1938	0.00710 )
(46756	EV	27AP1938	0.00672 )	(46761	EV	27MY1938	0.01908 )	(46766	EV	14DE1938	0.01584 )
( 1223	B 3	18MY1964	0.01094 )	( 1224	B 4	18MY1964	0.00980 )	( 1225	C 6	15MY1964	0.00392 )
( 1226	C 7	16MY1964	0.01142 )	( 1227	C* 2	13MY1964	0.00658 )	( 1228	D 2	14MY1964	0.00779 )
( 1229	D 5	14MY1964	0.01692 )	( 1230	E 2	16MY1964	0.00889 )	( 1231	E 3	16MY1964	0.00782 )
( 1232	E 5	16MY1964	0.06609 )	( 1233	B 3	5JN2964	0.01191 )	( 1234	B 3	18JN1964	0.00281 )
( 1439	B 6	5JN1964	0.00999 )	( 1236	C* 1	8JN1964	0.00175 )	( 1237	C* 2	8JN1964	0.00516 )
( 1238	D 3	11JN1964	0.01600 )	( 1239	D 4	11JN1964	0.00116 )	( 1240	D 6	10JN1964	0.02301 )
( 1241	E 2	13JN1964	0.01183 )	( 1242	E 3	13JN1964	0.01049 )	( 1243	E 6	13JN1964	0.01253 )
( 1244	F 1	11JN1964	0.04934 )	( 1245	F 2	11JN1964	0.02766 )	( 1246	F 3	11JN1964	0.07769 )
( 1254	D 2	15JL1964	0.00958 )	( 1256	E 2	14JL1964	0.00916 )	( 1257	E 3	14JL1964	0.01196 )
( 1258	F 1	6JL1964	0.00472 )	( 1260	F 3	6JL1964	0.00573 )	( 1267	D 6	18AU1964	0.00216 )
( 1269	F 3	15AU1964	0.00548 )	( 1444	B 6	19SE1964	0.00303 )	( 1271	C 7	22SE1964	0.00653 )
( 1280	E 2	16SE1964	0.00681 )	( 1285	F 1	15SE1964	0.01165 )	( 1297	D 6	14UL1964	0.00190 )
( 1298	E 1	12OC1964	0.00269 )	( 1295	E 2	12OC1964	0.00314 )	( 1300	E 3	13GC1964	0.01432 )
( 1302	E 5	13OC1964	0.00405 )	( 1303	E 6	13OC1964	0.00560 )	( 1304	F 1	11OC1964	0.00988 )
( 1305	F 2	11OC1964	0.00518 )	( 1308	C 7	6NC1964	0.00304 )	( 1311	D 1	8ND1964	0.00258 )
( 1317	E 1	6ND1964	0.00191 )	( 1322	E 6	7ND1964	0.00333 )	( 1336	C 3	27JA1967	0.00193 )
( 1337	C 3	2MR1967	0.00294 )	( 1338	C 3	28MR1967	0.00926 )	( 1339	C 5	28MR1967	0.00467 )
( 1340	C 7	28MR1967	0.00436 )	( 1341	A 3	19AP1967	0.01627 )	( 1342	A 4	19AP1967	0.00180 )
( 1343	A 6	19AP1967	0.01251 )	( 1344	C 3	25AP1967	0.00496 )	( 1345	C 5	25AP1967	0.01754 )
( 1346	C 7	21AP1967	0.01202 )	( 1347	E 2	23AP1967	0.00488 )	( 1348	E 5	23AP1967	0.01234 )
( 1368	A 3	4MY1967	0.01571 )	( 1369	A 4	4MY1967	0.01118 )	( 1370	A 6	3MY1967	0.04143 )
( 1371	C 3	4MY1967	0.00923 )	( 1372	C 5	5MY1967	0.03901 )	( 1374	E 2	7MY1967	0.01494 )
( 1375	F 3	7MY1967	0.04331 )	( 1376	E 5	6MY1967	0.01687 )	( 1410	A 6	24MY1967	0.01128 )
( 1412	C 5	31MY1967	0.01263 )	( 1415	E 3	28MY1967	0.00225 )	( 1435	C 7	13JN1967	0.00316 )
( 1436	E 2	15JN1967	0.00362 )	( 1532	A 3	18SE1967	0.00329 )	( 1537	E 3	24SE1967	0.00431 )
( 1379	GS 3	9MY1967	0.00619 )	( 1380	GS 4	9MY1967	0.00336 )	( 1381	GS 5	10MY1967	0.00477 )
( 1382	GS 6	10MY1967	0.00555 )	( 1383	GS 7	10MY1967	0.00802 )	( 1384	GS 8	10MY1967	0.00739 )
( 1385	GS 9	10MY1967	0.00471 )	( 1386	GS10	12MY1967	0.00575 )	( 1387	GS11	12MY1967	0.01188 )
( 1388	GS12	12MY1967	0.01207 )	( 1390	GS14	12MY1967	0.02936 )	( 1391	GS15	12MY1967	0.00479 )
( 1393	GS17	13MY1967	0.00274 )	( 1394	GS18	13MY1967	0.00516 )	( 1397	GS21	13MY1967	0.00065 )
( 1398	GS22	14MY1967	0.00304 )	( 1558	GS 5	4CC1967	0.00396 )	( 1567	GS15	5OC1967	0.00159 )
( 1574	GS22	6OC1967	0.00288 )	( 1546	LU 1	20C1967	0.00500 )	( 1523	RA 1	19SE1967	0.00923 )
( 1526	MO 1	20SE1967	0.02845 )	( 1527	TR 1	20SE1967	0.05660 )	( 1528	SB 1	20SE1967	0.01444 )
( 1529	KW 1	20SE1967	0.01199 )	( 1545	WL 1	20C1967	0.04730 )	( 1550	MR 1	5OC1967	0.02478 )
( 1428	MU 2	29MY1967	0.01205 )	( 1426	MS 2	25MY1967	0.01050 )	( 1351	MI 2	21AP1967	0.03103 )
( 1427	LU 2	29MY1967	0.01211 )	( 1417	HC 2	22MY1967	0.04486 )	( 1350	BH 2	15AP1967	0.00441 )
( 1425	RA 2	25MY1967	0.02652 )	( 1399	PM 2	5MY1967	0.02720 )	( 1401	MO 2	6MY1967	0.01759 )
( 1402	TR 2	6MY1967	0.18952 )	( 1400	SB 2	25AP1967	0.03107 )	( 1403	CA 2	10MY1967	0.05231 )
( 1353	FR 2	23AP1967	0.02110 )	( 1354	GH 2	19AP1967	0.04670 )	( 1406	CB 2	13MY1967	0.01348 )
( 1407	SM 2	14MY1967	0.01791 )	( 1349	CI 2	23MY1967	0.01511 )	( 1421	CH 2	23MY1967	0.00940 )
( 1419	BU 2	23MY1967	0.05492 )	( 1420	IR 2	25MY1967	0.08992 )	( 1424	KN 2	25MY1967	0.02665 )
( 1422	GA 2	23MY1967	0.16349 )	( 1423	WA 2						

*Surirella biseriata* Bréb. and Godey

*Surirella biseriata* de Brébisson and Godey, Mem. Soc. Acad. Falaise, 1:53, pl. 7. 1835.

Coll: 1552a.

*Surirella biseriata* var. *bifrons* (Ehr.) Hust.

*Navicula bifrons* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1832:259. 1832.

*Surirella bifrons* (Ehr.) Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:388, pl. 3(5), fig. 5. 1843.

*Surirella biseriata* var. *bifrons* Hustedt in: Pascher, Süßw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 433, fig. 833. 1930.

652 SUBISEVB TCT NO OF STATIONS 3											
16C973	CH	1876	0.02362 )	( 3541	Ch	1FE1881	0.02935 )	( 1565	GS13	50C1967	C.00507 )

*Surirella elegans* Ehr.

*Surirella elegans* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:424. 1843.

Coll: 1407a.

*Surirella guatemalensis* Ehr.

*Surirella guatemalensis* Ehrenberg, Mikrogeologie, pl. 33(6), fig. 7. 1854.

Coll: 1552a.

*Surirella linearis* Wm. Smith

*Surirella linearis* Wm. Smith, Syn. British Diat., Vol. 1, p. 31, pl. 8, fig. 58z. 1853.

66C SULSPECCA TCT NO OF STATIONS 1											
114C7	SM 2	14MY1567	C.00597 )	(							

*Surirella linearis* var. *constricta* (Ehr.) Grun.

*Navicula ? constricta* Ehrenberg, Infusionsthierchen, p. 188, pl. 21, fig. 17. 1838.

*Surirella constricta* (Ehr.) Ehrenberg, Mikrogeologie, pl. 14, fig. 37. 1854.

*Surirella linearis* var. *constricta* (Ehr.) Grunow, Verh. Zool.-Bot. Ges. Wien, 12:455. 1862.

653 SULINEVC TCT NO OF STATIONS 1											
11279	E 1	16SE1964	0.00393 )	(							

*Surirella linearis* var. *helvetica* (Brun) Meist.

*Surirella helvetica* Brun, Diat. Alpes et Jura, p. 100, pl. 2, fig. 4. 1880.

*Surirella linearis* var. *helvetica* (Brun) Meister, Beitr. Kryptog.-Fl. Schweiz, 4(1):223, pl. 41, fig. 6. 1913.

654 SULINEVH TCT NO OF STATIONS 7											
( 3541	CH	1FE1881	0.00578 )	( 46521	Ch	23NC1945	C.00065 )	( 46906	CH	MY1947	C.00133 )
146922	CH	21AU1947	0.00048 )	( 1346	C 7	21AP1967	0.00134 )	( 1388	GS12	12MY1967	C.00603 )
( 1407	SM 2	14MY1567	0.00597 )	(							

*Surirella ovata* Kütz.

*Surirella ovata* Kützing, Bacill., p. 62, pl. 7, figs. 1-4. 1844.

655 SUOVATA TOT NO OF STATICS 64

( 46921 )	CH	23NO1945	0.00388 )	( 46517 )	CH	12JA1946	0.00194 )	( 46915 )	CH	20FE1946	0.00569 )
( 46914 )	CH	19AP1946	0.04698 )	( 46924 )	CH	10MY1946	0.00282 )	( 46923 )	CH	22NO1946	0.00437 )
( 46920 )	CH	20CE1946	0.00154 )	( 46505 )	CH	JA1947	0.00613 )	( 46909 )	CH	MR1947	0.07741 )
( 46912 )	CH	AP1947	0.02300 )	( 46506 )	CH	MY1947	0.00398 )	( 46919 )	CH	5JN1947	0.00455 )
( 46907 )	CH	JL1947	0.00690 )	( 46522 )	CH	21AU1947	0.00145 )	( 46758 )	EV	5JN1937	0.00357 )
( 46764 )	EV	17JL1937	0.02417 )	( 46744 )	EV	6OC1937	0.00488 )	( 1226 )	C 7	16MY1964	0.00381 )
( 1228 )	D 2	14MY1964	0.00195 )	( 1231 )	E 3	16MY1964	0.00245 )	( 1232 )	E 5	16MY1964	0.01044 )
( 1238 )	D 3	11JN1964	0.00200 )	( 1240 )	D 6	10JN1964	0.00307 )	( 1242 )	E 3	13JN1964	0.00150 )
( 1244 )	F 1	11JN1964	0.00219 )	( 1245 )	F 2	11JN1964	0.00346 )	( 1246 )	F 3	11JN1964	0.00598 )
( 1252 )	C* 1	16JL1964	0.00279 )	( 1256 )	E 2	14JL1964	0.00183 )	( 1257 )	E 3	14JL1964	0.00239 )
( 1258 )	F 1	6JL1964	0.00236 )	( 1259 )	F 2	6JL1964	0.00310 )	( 1268 )	E 2	15AU1964	0.00547 )
( 1272 )	C* 1	10SE1964	0.00410 )	( 1285 )	F 1	15SE1964	0.00582 )	( 1300 )	E 3	13OC1964	0.00358 )
( 1341 )	A 3	19AP1967	0.00108 )	( 1343 )	A 6	19AP1967	0.00069 )	( 1346 )	C 7	21AP1967	0.00134 )
( 1371 )	C 3	4MY1967	0.00462 )	( 1375 )	E 3	7MY1967	0.00241 )	( 1413 )	C 7	25MY1967	0.00316 )
( 1416 )	E 5	28MY1967	0.00219 )	( 1436 )	E 2	15JN1967	0.00724 )	( 1512 )	E 3	1SE1967	0.00393 )
( 1382 )	GS 6	10MY1967	0.00278 )	( 1384 )	GS 8	10MY1967	0.00370 )	( 1391 )	GS 15	12MY1967	0.00479 )
( 1522 )	BH 1	18SE1967	0.00182 )	( 1529 )	KW 1	20SE1967	0.01199 )	( 1351 )	MI 2	21AP1967	0.00310 )
( 1427 )	LU 2	29MY1967	0.01211 )	( 1417 )	HO 2	22MY1967	0.00374 )	( 1350 )	BH 2	15AP1967	0.00881 )
( 1425 )	RA 2	25MY1967	0.01768 )	( 1401 )	MO 2	6MY1967	0.01764 )	( 1402 )	TR 2	6MY1967	0.02707 )
( 1400 )	SB 2	6MY1967	0.01787 )	( 1354 )	GH 2	25AP1967	0.00690 )	( 1403 )	CA 2	10MY1967	0.00323 )
( 1404 )	MO 2	10MY1967	0.01270 )	( 1422 )	GA 2	23MY1967	0.00511 )	( 1423 )	WA 2	25MY1967	0.00856 )
( 1424 )	KN 2	25MY1967	0.02665 )	(							

*Surirella ovata* var. *pinnata* (Wm. Smith) Hust.

*Surirella pinnata* Wm. Smith, Syn. British Diat., Vol. 1, p. 34, pl. 9, fig. 72. 1853.

*Surirella ovata* var. *pinnata* (Wm. Smith) Hustedt in: Pascher, Süsw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 442, fig. 865. 1930.

656 SLQVATVP TCT AC CF STATICS 21

( 3507 )	CH	19FE1881	0.01132 )	( 46506 )	CH	MY1947	0.00265 )	( 46919 )	CH	5JN1947	0.00455 )
( 46907 )	CH	JL1947	0.00049 )	( 46522 )	CH	21AU1947	0.00048 )	( 46758 )	EV	5JN1937	0.00713 )
( 46747 )	EV	1AU1937	0.00248 )	( 46759 )	EV	19MY1938	0.00338 )	( 1232 )	E 5	16MY1964	0.00174 )
( 1236 )	C* 1	8JN1964	0.00175 )	( 1245 )	F 2	11JN1964	0.00346 )	( 1452 )	E 2	14JL1967	0.00213 )
( 1556 )	GS 3	3OC1967	0.00521 )	( 1417 )	HO 2	22MY1967	0.00374 )	( 1350 )	BH 2	15AP1967	0.00220 )
( 1402 )	TR 2	6MY1967	0.01083 )	( 1400 )	SB 2	6MY1967	0.00596 )	( 1354 )	GH 2	25AP1967	0.00345 )
( 1405 )	ES 2	12MY1967	0.00645 )	( 1406 )	GB 2	13MY1967	0.00809 )	( 1423 )	WA 2	25MY1967	0.00856 )

*Surirella robusta* var. *splendida* (Ehr.) V. H.

*Navicula ? splendida* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1832:81. 1832.

*Surirella splendida* (Ehr.) Ehrenberg, Mikrogeologie, pl. 3(2), fig. 17. 1854.

*Surirella robusta* var. *splendida* (Ehr.) Van Heurck, Syn. Diat. Belgique, p. 187. 1885.

657 SURORLVS TCT AC CF STATICS 2

( 3541 )	CH	1FE1881	0.00578 )	( 1407 )	SM 2	14MY1967	0.00597 )	(			
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*Surirella tenera* var. *nervosa* A. S.

*Surirella tenera* var. *nervosa* A. Schmidt, Atlas Diat., pl. 23, figs. 15-17. 1875.

Coll: #844.

*Surirella tenuissima* Hust.

*Surirella tenuissima* Hustedt in: A. Schmidt, Atlas Diat., pl. 299, fig. 15. 1913.

659. SUTENUIQ TCT AC CF STATICS 1

( 1550 )	MR 1	5OC1967	0.01235 )	(							
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# Species incertae sedis

## Surirella sp. #3.

661. SUSPECTED TYPE OF STATIONS 11

(46922)	CH	21AU1947	0.00145 )	(46758)	EV	5JN1937	0.00357 )	(46764)	EV	17JL1937	C.08864 )
(46757)	EV	25JL1937	0.00963 )	(46747)	EV	1AU1937	0.01485 )	(46752)	EV	15SE1937	C.02177 )
(46750)	EV	24SE1937	0.00471 )	(46744)	EV	60C1937	0.00488 )	(1527)	TR 1	20SE1967	C.00629 )
(1404)	MO 2	10MY1967	0.01270 )	(1423)	WA 2	25MY1967	0.00428 )	(			

## Genus *Synedra* Ehr.

Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1830:40. 1832.

## *Synedra acus* Kütz.

*Synedra acus* Kützing, Bacill., p. 68, pl. 15, fig. 7. 1844.

Cells in girdle view elongate, rectangular with parallel sides. Specimens from Lake Michigan 90-200 $\mu$  long, 4-6 $\mu$  broad at the widest point. Valves lanceolate, gradually tapering to rounded or subcapitate ends. Striae perpendicular to the mid-line of the valve throughout, very finely cross-lineate, about 12-14 in 10 $\mu$ . Axial area narrow, linear, very slightly expanded in the central portion of the valve. A distinct, quadrate, central area is always present in this species. It lacks any regular ornamentation but occasionally contains what appears to be incompletely developed striae, especially near the valve margins.

This species is occasional in our collections. Its primary habitat is apparently in the periphyton, but, like many other members of the genus, it is able to maintain its existence in the phytoplankton.

662. SYACUS TYPE OF STATIONS 50

(46921)	CH	23NO1945	0.00065 )	(46524)	CH	10MY1946	C.00071 )	(46916)	CH	4MY1947	C.00068 )
(46922)	CH	21AU1947	C.00097 )	(46758)	EV	5JN1937	0.66329 )	(46771)	EV	11JN1937	C.01664 )
(46743)	EV	20JN1937	0.00856 )	(46770)	EV	9JL1937	0.03578 )	(46764)	EV	17JL1937	C.02417 )
(46757)	EV	25JL1937	0.00963 )	(46747)	EV	1AU1937	0.00248 )	(46765)	EV	30AU1937	C.01115 )
(46744)	EV	60C1937	0.00488 )	(46749)	EV	12MR1938	0.01214 )	(46762)	EV	18MR1938	C.02206 )
(46756)	EV	27AP1938	0.00168 )	(46761)	EV	27MY1938	C.00273 )	(1234)	B 3	18JN1964	C.00562 )
(1237)	C* 2	8JN1964	0.01031 )	(1241)	E 2	13JN1964	0.00148 )	(1243)	E 6	13JN1964	C.00418 )
(1244)	F 1	11JN1964	0.00110 )	(1252)	C* 1	16JL1964	0.00279 )	(1270)	F 1	10AU1964	C.00545 )
(1285)	F 1	15SE1964	0.00582 )	(1297)	D 6	14OC1964	0.00381 )	(1304)	F 1	11OC1964	C.00494 )
(1320)	E 4	7NO1964	0.00620 )	(1387)	GS11	12MY1967	0.00396 )	(1394)	GS18	13MY1967	C.00172 )
(1395)	GS19	13MY1967	0.00117 )	(1396)	GS20	13MY1967	C.00074 )	(1575)	GS28	60C1967	C.00129 )
(1522)	BH 1	18SE1967	0.00182 )	(1550)	MR 1	50C1967	C.04956 )	(1553)	SG 1	60C1967	C.02203 )
(1428)	MU 2	29MY1967	0.00904 )	(1426)	MS 2	29MY1967	C.23097 )	(1417)	HO 2	22MY1967	C.01122 )
(1350)	BH 2	19AP1967	0.00220 )	(1401)	MO 2	6MY1967	0.02352 )	(1400)	SB 2	6MY1967	C.14892 )
(1354)	GH 2	25AP1967	0.00863 )	(1429)	WL 2	29MY1967	C.01062 )	(1403)	CA 2	10MY1967	C.05231 )
(1404)	MO 2	10MY1967	0.06352 )	(1405)	ES 2	12MY1967	0.01290 )	(1407)	SM 2	14MY1967	C.01791 )
(1406)	GB 2	13MY1967	0.01617 )	(1422)	GA 2	23MY1967	C.01022 )	(			

## *Synedra amphicephala* Kütz.

*Synedra amphicephala* Kützing, Bacill., p. 64, pl. 3, fig. 12. 1844.

Cells in girdle view elongate, sub-rectangular, narrowed toward the ends. Specimens from Lake Michigan 15-50 $\mu$  long, 2-4 $\mu$  broad. Valves linear to, especially in the smaller individuals, linear-lanceolate with distinctly protracted sub-capitate to capitate apices. Striae finely structured, very finely cross-lineate, parallel throughout the length of the valve, 13-16 in 10 $\mu$ . Axial area narrow, slightly lanceolate. Specimens from Lake Michigan lack a central area.

This species apparently finds its primary habitat in the periphyton but is able to exist in the plankton. Most of our specimens come from the northern portion of the lake.

664	SYAMPHVA	TCT NO OF STATIONS	1
( 1343	A 6	19AP1967	0.00065 ) (

*Synedra amphicephala* var. *austriaca* (Grun.) Hust.

*Synedra austriaca* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 39, figs. 16a-b. 1881.

*Synedra amphicephala* var. *austriaca* (Grun.) Hustedt in: Rabenhorst, Kryptog.-Fl. Deutschland, 7(2)2:206, figs. 696b-d. 1932.

Valves lanceolate with capitate ends. Striae 12-15 in 10 $\mu$ . Morphology and ornamentation of the frustule otherwise essentially similar to the nominate variety.

More common than the nominate variety in our collections, this entity apparently is better adapted to planktonic existence.

252	FRGRACIO	TCT NO OF STATIONS	20
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(46917	CH	12JA1946	0.00055 )	(46924	CH	10MY1946	0.00423 )	(46923	CH	22NC1946	0.01748 )
(46916	CH	4MY1947	0.00238 )	(46519	CH	5JN1947	0.21699 )	(46922	CH	21AU1947	0.00921 )
(46758	EV	5JN1937	0.12481 )	(46743	EV	20JN1937	0.01713 )	(46770	EV	9JL1937	0.01193 )
(46764	EV	17JL1937	0.05641 )	(46763	EV	23AU1937	0.16234 )	(46765	EV	30AU1937	0.02231 )
(46752	EV	15SE1937	0.04354 )	(46760	EV	22SE1937	0.00492 )	(46750	EV	24SE1937	0.02828 )
(46744	EV	6OC1937	0.01951 )	( 1258	F 1	6JL1964	0.01652 )	( 1259	F 2	6JL1964	0.00930 )
( 1260	F 3	6JL1964	0.00382 )	( 1549	MQ 1	4OC1967	0.04111 )	(			

*Synedra capitata* Ehr.

*Synedra capitata* Ehrenberg, Poggendr. Ann. Phys., Ser. 2, 38:221, pl. 3, fig. 3(1). 1836.

Cells in girdle view linear with slightly expanded apices. Specimens from Lake Michigan 150-420 $\mu$  long, 7-10 $\mu$  broad. Valves linear with much expanded cuneately narrowed apices. Striae coarse, distinctly punctate-lineate, parallel throughout most of the length of the valve, becoming radiate in the expanded apices, 7-10 in 10 $\mu$ . Axial area narrow but distinct, linear throughout. Central area often entirely lacking, when present rather small, quadrate, not reaching the margins of the valve. A distinct "jelly pore" is visible at the ends of the valve.

This very distinctive species is restricted to the periphyton and only occasional accidental occurrences have been noted in our collections.

666	SYCAPITA	TCT NO OF STATIONS	5
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(60973	CH	1876	0.02362 )	( 3540	CH	11MY1879	0.00466 )	(46916	CH	4MY1947	0.00034 )
( 1396	G520	13MY1967	0.00074 )	( 1350	BH 2	19AP1967	0.00881 )	(			

*Synedra cyclopus* Brutschy

*Synedra cyclopus* Brutschy, Internat. Rev. Hydrobiol., 10:284, fig. 11. 1922.

Living cells attached at one end, usually to planktonic microcrustaceans. Usually several cells are attached at a common point, forming a bushy colony. Valves arcuate, narrowing to rostrate to sub-capitate ends. Specimens from Lake Michigan 30-65 $\mu$  long, 3-4 $\mu$  broad. Striae finely structured, parallel throughout the length of the valve, 14-18 in 10 $\mu$ . Axial area narrow, linear, often slightly displaced toward the concave margin of the valve. Central area may be either present or absent, when present it is quite small, elliptical in shape and does not extend to the margins of the valve.



The secondarily planktonic, epizoic growth habit of this species appears to be obligate. It is most common on copepods although it is occasionally observed on other zooplankters.

668	SYSYCLOP	TOT	NO	OF	STATIONS	2				
( 1260	F 3	6JL1964	0.00191	)	( 1568	GS16	50C1967	0.00144	)	(

*Synedra delicatissima* Wm. Smith

*Synedra delicatissima* Wm. Smith, Syn. British Diat., vol. 1, pl. 12, fig. 94. 1853.

Cells in girdle view linear, narrowing slightly toward the ends. Valves elongate-lanceolate with rounded to subcapitate ends. Specimens from Lake Michigan 100-335 $\mu$  long, 3-4 $\mu$  broad. Striae parallel throughout, 14-16 in 10 $\mu$ . Axial area narrow, filiform, central area variable, usually elongate-elliptical, not reaching the valve margins, in some specimens much reduced, only marked by a few irregular striae at the center of the valve.

705 SYSPECOH TCT NO CF STATIONS 11													
(46916	CH	4MY1947	0.00034	)	(46519	CH	5JN1947	2.36719	)	(46922	CH	21AU1947	C.0C145
(46744	EV	60C1937	0.00488	)	( 1244	F 1	11JN1964	0.00219	)	( 1246	F 3	11JN1964	C.01195
( 1270	F 1	10AU1964	0.00817	)	( 1348	E 5	23AP1967	0.00137	)	( 1426	MS 2	29MY1967	C.01050
( 1350	BH 2	19AP1967	0.00661	)	( 14C3	CA 2	10MY1967	0.02615	)	(			

*Synedra delicatissima* var. *angustissima* Grun.

*Synedra delicatissima* var. *angustissima* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 39, fig. 10. 1881.

*Synedra acus* var. *angustissima* (Grun.) Van Heurck, Syn. Diat. Belgique, p. 151. 1885.

Cells in girdle view linear, narrowed toward the ends. Valves elongate-lanceolate with subcapitate ends. Specimens from Lake Michigan 200-380 $\mu$  long, 4-5 $\mu$  broad. Striae parallel throughout, 12-14 in 10 $\mu$ . Axial area narrow, filiform, central area elongate, rectangular, usually reaching the margins of the valves. In some specimens the central area is irregularly bordered and tends to become more or less elliptical.

Both of these entities are euplanktonic in Lake Michigan. As is true of most members of the genus, certain morphologic characteristics, particularly the form of the central area, tends to be variable. Isolated specimens in the intermediate size range are difficult to distinguish, but large populations appear to fall into two discrete series.

663	SYACUSVA TOT NO CF STATIONS 315													
(60973	CH	1876	0.51960	)	( 3540	CH	11MY1875	0.07921	)	( 3541	CH	1FE1881	0.39127	)
( 3507	CH	19FE1881	0.14716	)	(46910	CH	0C1945	1.13602	)	(46921	CH	23NO1945	0.27356	)
(46908	CH	0E1945	0.09063	)	(46517	CH	12JA1946	0.21625	)	(46915	CH	20FE1946	0.30729	)
(46914	CH	19AP1946	0.10037	)	(46924	CH	10MY1946	0.89381	)	(46923	CH	22NO1946	0.78026	)
(46920	CH	20DE1946	0.20027	)	(46505	CH	JA1947	0.06128	)	(46909	CH	MR1947	0.12750	)
(46912	CH	AP1947	1.02484	)	(46516	CH	4MY1947	1.32323	)	(46906	CH	MY1947	2.37277	)
(46919	CH	5JN1947	0.69043	)	(46513	CH	6AU1947	0.16735	)	(46922	CH	21AU1947	0.18901	)
(46758	EV	5JN1937	0.39940	)	(46771	EV	11JN1937	0.57534	)	(46743	EV	20JN1937	0.06851	)
(46745	EV	3JL1937	0.27168	)	(46770	EV	9JL1937	0.02982	)	(46764	EV	17JL1937	0.16116	)
(46757	EV	25JL1937	0.24553	)	(46747	EV	1AU1937	0.55450	)	(46763	EV	23AU1937	0.14205	)
(46765	EV	30AU1937	0.22305	)	(46769	EV	7SE1937	0.54277	)	(46752	EV	15SE1937	0.06530	)
(46760	EV	22SE1937	0.27574	)	(46750	EV	24SE1937	0.19324	)	(46744	EV	60C1937	0.46820	)
(46748	EV	130C1937	0.02135	)	(46767	EV	270C1937	0.10444	)	(46768	EV	16MR1938	0.23519	)
(46762	EV	18MR1938	0.72783	)	(46751	EV	30MR1938	0.10049	)	(46772	EV	18AP1938	0.12065	)
(46756	EV	27AP1938	0.20485	)	(46759	EV	19MY1938	0.37812	)	(46761	EV	27MY1938	0.56143	)
(46766	EV	14DE1938	0.20596	)	( 1223	B 3	18MY1964	0.28440	)	( 1224	B 4	18MY1964	0.45878	)
( 1225	C 6	15MY1964	1.92081	)	( 1226	C 7	16MY1964	2.92998	)	( 1227	C* 2	13MY1964	0.42220	)
( 1228	D 2	14MY1964	1.36242	)	( 1229	D 5	14MY1964	2.96039	)	( 1230	E 2	16MY1964	1.86694	)

( 1231	E 3	16MY1964	2.62694 )	( 1232	E 5	16MY1964	1.70441 )	( 1233	B 3	5JN2964	C.22386 )
( 1234	B 3	18JN1964	0.17431 )	( 1235	C 7	16JN1964	0.16663 )	( 1439	B 6	5JN1964	1.02496 )
( 1236	C* 1	8JN1964	0.30631 )	( 1237	C* 2	8JN1964	0.20624 )	( 1238	D 3	11JN1964	1.96000 )
( 1239	D 4	11JN1964	0.17871 )	( 1240	D 6	10JN1964	0.71482 )	( 1241	E 2	13JN1964	1.24198 )
( 1242	E 3	13JN1964	1.39975 )	( 1243	E 6	13JN1964	2.63092 )	( 1244	F 1	11JN1964	0.16776 )
( 1245	F 2	11JN1964	0.59125 )	( 1246	F 3	11JN1964	0.92034 )	( 1247	B 3	14JL1964	C.22651 )
( 1248	B 3	24JL1964	0.05517 )	( 1440	B 6	11JL1964	0.28375 )	( 1441	B 6	24JL1964	C.46257 )
( 1249	C 3	8JL1964	0.05975 )	( 1250	C 6	10JL1964	0.25899 )	( 1251	C 7	16JL1964	0.22307 )
( 1252	C* 1	16JL1964	0.04184 )	( 1253	C* 2	16JL1964	0.37657 )	( 1254	D 2	15JL1964	C.98449 )
( 1255	D 5	15JL1964	0.23099 )	( 1256	E 2	14JL1964	C.85367 )	( 1257	E 3	14JL1964	1.11497 )
( 1258	F 1	6JL1964	0.90851 )	( 1259	F 2	6JL1964	1.08453 )	( 1260	F 3	6JL1964	1.51078 )
( 1261	B 3	2AU1964	0.00785 )	( 1262	B 3	17AU1964	0.01470 )	( 1442	B 6	2AU1964	C.28659 )
( 1443	B 6	16AU1964	0.01186 )	( 1263	C 7	15AU1964	0.00400 )	( 1264	C* 1	10AU1964	0.02124 )
( 1265	C* 2	10AU1964	0.07601 )	( 1266	D 3	18AU1964	0.44549 )	( 1267	D 6	18AU1964	C.01946 )
( 1268	E 2	15AU1964	1.05318 )	( 1269	E 3	15AU1964	C.29600 )	( 1270	F 1	10AU1964	C.68441 )
( 1444	B 6	19SE1964	0.21219 )	( 1271	C 7	22SE1964	C.01306 )	( 1272	C* 1	10SE1964	C.00821 )
( 1273	C* 2	10SE1964	C.06990 )	( 1274	D 1	17SE1964	C.06100 )	( 1275	D 2	17SE1964	C.11612 )
( 1276	D 3	18SE1964	1.13922 )	( 1277	D 4	18SE1964	0.09295 )	( 1278	D 6	18SE1964	C.53807 )
( 1279	E 1	16SE1964	0.20811 )	( 1280	E 2	16SE1964	0.37443 )	( 1281	E 3	16SE1964	C.29039 )
( 1282	E 4	16SE1964	0.22161 )	( 1283	E 5	16SE1964	0.77847 )	( 1284	E 6	17SE1964	1.22327 )
( 1285	F 1	15SE1964	2.44598 )	( 1286	F 2	15SE1964	1.02890 )	( 1287	F 3	15SE1964	C.70056 )
( 1288	B 3	15OC1964	0.02177 )	( 1445	B 6	14OC1964	0.20548 )	( 1289	C 7	14OC1964	0.27703 )
( 1290	C* 1	16OC1964	0.07580 )	( 1291	C* 2	16OC1964	0.01468 )	( 1292	D 1	15OC1964	C.01491 )
( 1293	D 2	15OC1964	0.12735 )	( 1294	D 3	15OC1964	C.53071 )	( 1295	D 4	15OC1964	C.10703 )
( 1296	D 5	14OC1964	0.05902 )	( 1297	D 6	14OC1964	0.23990 )	( 1298	E 1	12OC1964	C.14657 )
( 1299	E 2	12OC1964	0.26076 )	( 1300	E 3	13OC1964	2.00465 )	( 1301	E 4	13OC1964	C.74185 )
( 1302	E 5	13OC1964	1.41712 )	( 1303	E 6	13OC1964	0.78361 )	( 1304	F 1	11OC1964	C.03218 )
( 1305	F 2	11OC1964	0.28983 )	( 1306	F 3	11OC1964	1.16414 )	( 1307	B 6	NO1964	C.05051 )
( 1308	C 7	6NO1964	0.02737 )	( 1309	C* 1	10NO1964	0.20421 )	( 1310	C* 2	10NO1964	C.29252 )
( 1311	D 1	8NO1964	0.23477 )	( 1312	D 2	8NO1964	0.13037 )	( 1313	D 3	9NO1964	C.16988 )
( 1314	D 4	9NO1964	0.67178 )	( 1315	D 5	9NO1964	C.57780 )	( 1316	D 6	9NO1964	1.05772 )
( 1317	E 1	6NO1964	C.13403 )	( 1318	E 2	7NO1964	C.22639 )	( 1319	E 3	7NO1964	C.75956 )
( 1320	E 4	7NO1964	0.86867 )	( 1321	E 5	7NO1964	1.65358 )	( 1322	E 6	7NO1964	1.51631 )
( 1323	F 1	6NO1964	C.64948 )	( 1324	F 2	6NO1964	C.97827 )	( 1325	F 3	6NO1964	1.41061 )
( 1336	C 3	27JL1967	0.67395 )	( 1337	C 3	2MR1967	2.81309 )	( 1338	C 3	2MR1967	2.28222 )
( 1339	C 5	28MR1967	2.18245 )	( 1340	C 7	28MR1967	1.59542 )	( 1341	A 3	19AP1967	1.21497 )
( 1342	A 4	19AP1967	3.28443 )	( 1343	A 6	19AP1967	0.24316 )	( 1344	C 3	25AP1967	2.08454 )
( 1345	C 5	25AP1967	3.45789 )	( 1346	C 7	21AP1967	4.05111 )	( 1347	E 2	23AP1967	3.02390 )
( 1348	E 5	23AP1967	2.36600 )	( 1368	A 3	4MY1967	3.95853 )	( 1369	A 4	4MY1967	C.14336 )
( 1370	A 6	3MY1967	0.00230 )	( 1371	C 3	4MY1967	0.07849 )	( 1372	C 5	5MY1967	1.24131 )
( 1373	C 7	5MY1967	0.49917 )	( 1374	E 2	7MY1967	3.76565 )	( 1375	E 3	7MY1967	C.78443 )
( 1376	E 5	6MY1967	2.26114 )	( 1408	A 3	23MY1967	2.92447 )	( 1409	A 4	23MY1967	2.26343 )
( 1410	A 6	24MY1967	3.15742 )	( 1411	C 3	31MY1967	2.44123 )	( 1412	C 5	31MY1967	2.55072 )
( 1413	C 7	25MY1967	1.99008 )	( 1414	E 2	28MY1967	3.44584 )	( 1415	E 3	28MY1967	2.30697 )
( 1416	E 5	28MY1967	2.96967 )	( 1431	A 3	12JN1967	3.36277 )	( 1432	A 4	13JN1967	3.33379 )
( 1433	C 3	17JN1967	8.13848 )	( 1434	C 5	17JN1967	2.93097 )	( 1435	C 7	13JN1967	6.18824 )
( 1436	E 2	15JN1967	6.41916 )	( 1437	E 3	15JN1967	4.77485 )	( 1438	E 5	14JN1967	1.69208 )
( 1446	A 3	11JL1967	1.94217 )	( 1447	A 4	11JL1967	2.39989 )	( 1448	A 6	10JL1967	C.45514 )
( 1449	C 3	16JL1967	12.12885 )	( 1450	C 5	16JL1967	4.79863 )	( 1451	C 7	16JL1967	1.68845 )
( 1452	E 2	14JL1967	3.77656 )	( 1453	E 3	15JL1967	4.00880 )	( 1454	E 5	15JL1967	C.35007 )
( 1504	A 3	28AU1967	0.69127 )	( 1505	A 4	28AU1967	0.23189 )	( 1506	A 6	29AU1967	C.00523 )
( 1509	C 5	2SE1967	2.35187 )	( 1510	C 7	29AU1967	C.44262 )	( 1511	E 2	1SE1967	1.86021 )
( 1512	E 3	1SE1967	7.69593 )	( 1513	E 5	31AU1967	3.31408 )	( 1532	A 3	18SE1967	C.04599 )
( 1533	A 4	19SE1967	0.01857 )	( 1534	A 6	19SE1967	C.10858 )	( 1535	C 7	20SE1967	C.01288 )
( 1536	E 2	24SE1967	3.81742 )	( 1537	E 3	24SE1967	4.42508 )	( 1538	E 5	23SE1967	2.32006 )
( 1539	C 3	4OC1967	0.00503 )	( 1540	C 5	4OC1967	C.01489 )	( 1541	E 2	11OC1967	C.28205 )
( 1542	E 3	11OC1967	2.61391 )	( 1543	E 5	10OC1967	0.63209 )	( 1377	GS 1	9MY1967	C.16228 )
( 1378	GS 2	9MY1967	C.95875 )	( 1379	GS 3	9MY1967	C.46732 )	( 1380	GS 4	9MY1967	2.66685 )
( 1381	GS 5	10MY1967	2.11325 )	( 1382	GS 6	10MY1967	0.11380 )	( 1383	GS 7	10MY1967	1.21632 )
( 1384	GS 8	10MY1967	1.12025 )	( 1385	GS 9	10MY1967	1.09722 )	( 1386	GS10	12MY1967	C.25280 )
( 1387	GS11	12MY1967	0.87136 )	( 1388	GS12	12MY1967	0.05430 )	( 1389	GS13	12MY1967	C.09282 )
( 1390	GS14	12MY1967	0.15965 )	( 1391	GS15	12MY1967	0.57463 )	( 1392	GS16	12MY1967	C.75816 )
( 1393	GS17	13MY1967	C.70129 )	( 1394	GS18	13MY1967	1.68576 )	( 1395	GS19	13MY1967	C.27480 )
( 1396	GS20	13MY1967	0.06511 )	( 1397	GS21	13MY1967	C.13081 )	( 1398	GS22	14MY1967	1.55395 )
( 1554	GS 1	3OC1967	2.15612 )	( 1555	GS 2	3OC1967	C.38489 )	( 1556	GS 3	3OC1967	C.07822 )
( 1557	GS 4	3OC1967	0.57922 )	( 1558	GS 5	4CC1967	0.27747 )	( 1559	GS 7	4OC1967	C.52808 )
( 1560	GS 8	4OC1967	0.45813 )	( 1561	GS 9	4CC1967	1.09174 )	( 1562	GS10	5OC1967	C.65078 )
( 1563	GS11	5OC1967	0.55886 )	( 1564	GS12	5OC1967	0.01152 )	( 1565	GS13	5OC1967	C.03042 )
( 1566	GS14	5OC1967	0.10457 )	( 1567	GS15	5OC1967	C.18894 )	( 1568	GS16	5OC1967	C.67243 )
( 1569	GS17	5OC1967	C.90081 )	( 1570	GS18	5OC1967	C.12892 )	( 1571	GS19	6OC1967	C.05151 )
( 1572	GS20	6OC1967	0.00090 )	( 1573	GS21	6CC1967	0.03920 )	( 1574	GS22	6OC1967	C.44584 )
( 1575	GS28	6OC1967	0.15352 )	( 1544	MU 1	20C1967	0.01191 )	( 1547	MS 1	20C1967	C.03194 )
( 1546	LU 1	20C1967	C.03001 )	( 1520	HC 1	18SE1967	C.03772 )	( 1521	SH 1	18SE1967	C.06347 )
( 1522	BH 1	18SE1967	1.94380 )	( 1526	MO 1	20SE1967	0.05120 )	( 1527	TR 1	20SE1967	C.05660 )
( 1528	SB 1	20SE1967	0.08663 )	( 1529	KW 1	20SE1967	0.14390 )	( 1530	FR 1	24SE1967	C.14001 )
( 1531	GH 1	25SE1967	1.06509 )	( 1548	CA 1	3OC1967	0.05088 )	( 1549	MQ 1	4OC1967	1.60340 )
( 1551	ES 1	5OC1967	0.44732 )	( 1552	SM 1	6OC1967	0.66689 )	( 1550	MR 1	5OC1967	C.15824 )
( 1553	SG 1	6OC1967	0.13954 )	( 1428	MU 2	29MY1967	C.35253 )	( 1426	MS 2	29MY1967	14.89764 )
( 1351	MI 2	21AP1967	2.54771 )	( 1427	LU 2	29MY1967	6.45278 )	( 1417	HO 2	22MY1967	2.23194 )
( 1418	SH 2	22MY1967	0.88647 )	( 1350	BH 2	19AP1967	1.55063 )	( 1425	RA 2	25MY1967	3.58058 )
( 1399	PW 2	5MY1967	3.40724 )	( 1401	MO 2	6MY1967	2.06961 )	( 1402	TR 2	6MY1967	C.92593 )
( 1400	SB 2	6MY1967	3.36550 )	( 1352	KW 2	21AP1967	1.92407 )	( 1353	FR 2	23AP1967	1.46624 )
( 1354	GH 2	25AP1967	0.20195 )	( 1429	WL 2	29MY1967	1.58191 )	( 1403	CA 2	10MY1967	1.67386 )
( 1404	MO 2	10MY1967	1.09248 )	( 1405	ES 2	12MY1967	0.65144 )	( 1407	SM 2	14MY1967	C.65863 )
( 1349	CI 2	19AP1967	0.88009 )	( 1406	GB 2	13MY1967	C.07818 )	( 1419	BU 2	23MY1967	5.07140 )
( 1420	IH 2	23MY1967	3.70091 )	( 1421	CH 2	23MY1967	4.25052 )	( 1422	GA 2	23MY1967	2.61585 )
( 1423	WA 2	25MY1967	0.36398 )	( 1424	KN 2	25MY1967	5.82201 )	( 1430	MC 2	12JN1967	0.54281 )

*Synedra demerarae* Grun.

*Synedra ? demerarae* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 41, fig. 29. 1881.

Cells in girdle view linear, slightly narrowed toward the ends. Cells sometimes attached by the valve faces into short, band-shaped colonies.

Valves lanceolate with capitate ends. Specimens from Lake Michigan 20-90 $\mu$  long, 2.5-4 $\mu$  broad. Axial area highly variable, in the smaller individuals wide and more or less lanceolate, in the larger individuals narrow and filiform. Central area entirely lacking in most specimens, in some of the larger individuals marked by a few partially developed striae near the center of the valve. Striae appearing very coarse and well defined 8-12, usually 8-10, in 10 $\mu$ . One of the most distinctive features of this taxon is the alternate placement of the striae on the two sides of the axial area rather than being opposite one another as is the case in most species of the genus.

The identity of the specimens from Lake Michigan assigned to this taxon is somewhat questionable. The striae are not marginal as in Grunow's original illustration except in the very small individuals. The size range of our specimens is also considerably greater than that reported by other authors (Patrick and Reimer 1966). There is also some question as to the correct generic classification in that our specimens sometimes occur in colonies similar to *Fragilaria*. As has been pointed out by numerous authorities, colony formation is an extremely tenuous taxonomic characteristic in diatoms and a number of the smaller taxa are more or less arbitrarily assigned to either *Synedra* or *Fragilaria* although they may adopt the growth habit "characteristic" of either genus.

670. SYDEMERG TCT NC OF STATIONS 153

( 160973 )	CH	1876	0.04724 )	( 3540	CH	11MY1879	0.10716 )	( 3541	CH	1FE1881	C.1C760 )
( 3507 )	CH	19FE1881	0.20376 )	( 46910	CH	0C1945	0.00983 )	( 46921	CH	23NO1945	C.02005 )
( 46908 )	CH	0E1945	0.02014 )	( 46517	CH	12JA1946	0.00943 )	( 46915	CH	20FE1946	C.C6829 )
( 46914 )	CH	19AP1946	0.01281 )	( 46524	CH	10MY1946	0.05573 )	( 46923	CH	22NO1946	C.22293 )
( 46920 )	CH	20DE1946	0.08011 )	( 465C5	CH	JA1947	C.03922 )	( 469C9	CH	MR1947	C.07286 )
( 46912 )	CH	AP1947	0.03449 )	( 46916	CH	4MY1947	0.00305 )	( 46906	CH	MY1947	C.01261 )
( 46919 )	CH	5JN1947	0.01214 )	( 465C7	CH	JL1947	C.01874 )	( 46922	CH	21AU1947	C.00436 )
( 46758 )	EV	5JN1937	0.08915 )	( 46743	EV	20JN1937	0.03426 )	( 46745	EV	3JL1937	C.02090 )
( 46670 )	EV	9JL1937	0.03578 )	( 46764	EV	17JL1937	0.16116 )	( 46757	EV	25JL1937	C.01444 )
( 46747 )	EV	1AU1937	0.19803 )	( 46763	EV	23AU1937	0.06088 )	( 46765	EV	30AU1937	C.00558 )
( 46752 )	EV	15SE1937	0.08707 )	( 46760	EV	22SE1937	C.33483 )	( 46750	EV	24SE1937	C.00943 )
( 46744 )	EV	6OC1937	0.02439 )	( 46767	EV	27OC1937	0.06576 )	( 46749	EV	12MR1938	C.03641 )
( 46768 )	EV	16MR1938	0.08820 )	( 46762	EV	18MR1938	0.02206 )	( 46751	EV	30MR1938	C.03350 )
( 46772 )	EV	18AP1938	0.01419 )	( 46756	EV	27AP1938	0.04533 )	( 46759	EV	19MY1938	C.00338 )
( 46761 )	EV	27MY1938	0.00818 )	( 46766	EV	14DE1938	0.09506 )	( 1224	B 4	18MY1964	C.C1568 )
( 1225 )	C 6	15MY1964	0.01568 )	( 1227	C' 2	13MY1964	0.00768 )	( 1228	D 2	14MY1964	C.01557 )
( 1229 )	D 5	14MY1964	0.01903 )	( 1230	E 2	16MY1964	0.00889 )	( 1231	E 3	16MY1964	C.C2201 )
( 1232 )	E 5	16MY1964	0.24349 )	( 1236	C' 1	8JN1964	C.00700 )	( 1239	D 4	11JN1964	0.01625 )
( 1240 )	D 6	10JN1964	0.00153 )	( 1241	E 2	13JN1964	0.00444 )	( 1242	E 3	13JN1964	C.CC300 )
( 1243 )	E 6	13JN1964	0.01462 )	( 1244	F 1	11JN1964	0.00329 )	( 1256	E 2	14JL1964	C.00366 )
( 1257 )	E 3	14JL1964	0.00239 )	( 1258	F 1	6JL1964	0.01888 )	( 1260	F 3	6JL1964	C.00382 )
( 1280 )	E 2	16SE1964	0.00681 )	( 1285	F 1	15SE1964	0.02330 )	( 1292	D 1	15OC1964	C.00373 )
( 1297 )	D 6	14OC1964	0.01523 )	( 1304	F 1	11OC1964	C.00494 )	( 1305	F 2	11OC1964	C.00173 )
( 1306 )	F 3	11OC1964	0.00277 )	( 1316	D 6	9ND1964	0.00378 )	( 1320	E 4	7ND1964	C.CC414 )
( 1321 )	E 5	7ND1964	0.00638 )	( 1322	E 6	7ND1964	0.04666 )	( 1323	F 1	6ND1964	C.CC139 )
( 1336 )	C 3	27JA1967	0.00578 )	( 1337	C 3	2MR1967	C.04997 )	( 1338	C 3	28MR1967	C.09256 )
( 1339 )	C 5	28MR1967	0.02182 )	( 1340	C 7	28MR1967	C.06036 )	( 1341	A 3	19AP1967	C.16706 )
( 1342 )	A 4	19AP1967	0.01444 )	( 1343	A 6	19AP1967	C.01042 )	( 1344	C 3	25AP1967	C.00993 )
( 1345 )	C 5	25AP1967	0.02924 )	( 1346	C 7	21AP1967	C.05074 )	( 1347	E 2	23AP1967	C.02276 )
( 1348 )	E 5	23AP1967	0.19191 )	( 1368	A 3	4MY1967	C.17279 )	( 1369	A 4	4MY1967	C.19755 )
( 1370 )	A 6	3MY1967	0.17033 )	( 1371	C 3	4MY1967	0.04155 )	( 1372	C 5	5MY1967	C.C6411 )
( 1373 )	C 7	5MY1967	0.11695 )	( 1374	E 2	7MY1967	0.04184 )	( 1375	E 3	7MY1967	C.19972 )
( 1376 )	E 5	6MY1967	C.78705 )	( 1408	A 3	23MY1967	0.07602 )	( 1409	A 4	23MY1967	C.C6546 )
( 1410 )	A 6	24MY1967	0.03383 )	( 1411	C 3	31MY1967	C.28720 )	( 1412	C 5	31MY1967	C.02105 )
( 1413 )	C 7	25MY1967	0.14531 )	( 1414	E 2	28MY1967	0.01343 )	( 1415	E 3	28MY1967	C.CC899 )
( 1416 )	E 5	28MY1967	0.07654 )	( 1431	A 3	12JN1967	0.00515 )	( 1432	A 4	13JN1967	C.C3576 )
( 1433 )	C 3	17JN1967	0.01938 )	( 1434	C 5	17JN1967	0.00897 )	( 1436	E 2	15JN1967	C.01447 )
( 1437 )	E 3	15JN1967	0.00538 )	( 1438	E 5	14JN1967	0.06173 )	( 1450	C 5	16JL1967	C.CC381 )
( 1453 )	E 3	15JL1967	0.00758 )	( 1506	A 6	29AU1967	0.00523 )	( 1511	E 2	15E1967	C.00307 )
( 1535 )	C 7	20SE1967	0.00322 )	( 1536	E 2	24SE1967	0.00273 )	( 1538	E 5	23SE1967	C.00552 )
( 1377 )	GS 1	9MY1967	0.02771 )	( 1378	GS 2	9MY1967	C.34061 )	( 1379	GS 3	9MY1967	C.25687 )
( 1380 )	GS 4	9MY1967	0.15806 )	( 1381	GS 5	10MY1967	0.25760 )	( 1382	GS 6	10MY1967	C.13600 )
( 1383 )	GS 7	10MY1967	0.04812 )	( 1384	GS 8	10MY1967	C.02033 )	( 1385	GS 9	10MY1967	C.04003 )
( 1386 )	GS10	12MY1967	0.08905 )	( 1387	GS11	12MY1967	0.13862 )	( 1388	GS12	12MY1967	C.C2413 )
( 1389 )	GS13	12MY1967	0.01031 )	( 1390	GS14	12MY1967	0.01762 )	( 1391	GS15	12MY1967	C.18675 )
( 1392 )	GS16	12MY1967	0.04315 )	( 1393	GS17	13MY1967	0.04657 )	( 1394	GS18	13MY1967	C.C4816 )
( 1395 )	GS19	13MY1967	0.00587 )	( 1398	GS22	14MY1967	0.00911 )	( 1559	GS 7	4OC1967	C.CC350 )
( 1560 )	GS 8	4OC1967	0.00472 )	( 1561	GS 9	4OC1967	0.00587 )	( 1574	GS22	6OC1967	C.00288 )
( 1521 )	SH 1	18SE1967	0.00577 )	( 1526	MC 1	20SE1967	0.01138 )	( 1529	KW 1	20SE1967	C.C1199 )
( 1351 )	MI 2	21AP1967	0.00621 )	( 1417	HO 2	22MY1967	0.00374 )	( 1402	TR 2	6MY1967	C.C6498 )
( 1400 )	SB 2	6MY1967	0.04470 )	( 1252	KW 2	21AP1967	C.01718 )	( 1423	WA 2	25MY1967	C.CC856 )

*Synedra filiformis* Grun.

*Synedra filiformis* Grunow in: Cleve and Grunow, Svenska Vet.-Akad. Handl., Ny Följd, 17(2):106, pl. 6, fig. 116. 1880.

Cells in girdle view very narrow, linear, occurring singly or in bushy colonies. Valves elongate-lanceolate with very fine, rounded, ends. Specimens from Lake Michigan 45-195 $\mu$  long, only 1-2 $\mu$  broad. The frustule is very lightly silicified and the striae are very fine in structure and difficult to resolve. Striae more or less marginal, parallel throughout the length of the valve, 26-30 in 10 $\mu$ . Axial area relatively wide, indistinctly bordered. In the specimens from Lake Michigan a central area is entirely lacking.

At the present time the taxonomy of the members of the genus *Synedra* that display extreme adaptations to planktonic existence is extremely confused. Many authors have considered many of these forms to be varieties of *S. acus*. Our observations do not support this view. The species most closely resembling the taxon discussed here are *S. ostenfeldii*, which is distinguished by its somewhat coarser structure and *S. tenera*, which is distinguished by its still finer structure and somewhat smaller size range. *Synedra nana* has been reported from Lake Michigan (Williams and Scott 1962) but their identification was apparently based on descriptions and illustrations published by Hustedt (1931) which in no way resemble the original description and illustration of Meister (1912).

703 SYSPECOF TCT NO OF STATIONS 277

(60973	CH	1876	0.23618	(	3541	CH	1FE1881	C.00578	(	46910	CH	CC1945	C.00109	)	
(46921	CH	23NO1945	0.02846	)	(46917	CH	12JA1946	0.00194	)	(46915	CH	20FE1946	0.28453	)	
(46914	CH	19AP1946	0.01175	)	(46524	CH	10MY1946	0.57354	)	(46923	CH	22NO1946	0.00874	)	
(46909	CH	MR1947	0.02277	)	(46512	CH	AP1947	0.02300	)	(46916	CH	4MY1947	0.00543	)	
(46906	CH	MY1947	2.67468	)	(46919	CH	5JN1947	0.78906	)	(46907	CH	JL1947	C.16026	)	
(46913	CH	6AU1947	0.01046	)	(46522	CH	21AU1947	0.02859	)	(46758	EV	5JN1937	C.79880	)	
(46771	EV	11JN1937	1.59764	)	(46743	EV	20JN1937	0.04710	)	(46764	EV	17JL1937	C.01612	)	
(46747	EV	1AU1937	0.04703	)	(46765	EV	30AU1937	0.01673	)	(46765	EV	7SE1937	C.02171	)	
(46752	EV	15SE1937	0.04354	)	(46760	EV	22SE1937	0.01477	)	(46750	EV	24SE1937	C.12726	)	
(46744	EV	6OC1937	0.54623	)	(46748	EV	13OC1937	C.02135	)	(46767	EV	27OC1937	C.37136	)	
(46749	EV	12MR1938	0.02427	)	(46768	EV	16MR1938	0.02940	)	(46762	EV	18MR1938	C.26467	)	
(46751	EV	30MR1938	0.01117	)	(46772	EV	18AP1938	C.00710	)	(46756	EV	27AP1938	C.02015	)	
(46759	EV	19MY1938	0.08440	)	(46761	EV	27MY1938	C.01090	)	(46766	EV	14DE1938	C.09506	)	
(	1224	B 4	18MY1964	0.00392	(	1225	C 6	15MY1964	0.01176	(	1226	C 7	16MY1964	C.00761	)
(	1227	C* 2	13MY1964	0.00548	(	1228	D 2	14MY1964	0.01168	(	1229	D 5	14MY1964	0.01692	)
(	1230	E 2	16MY1964	0.02963	(	1231	E 3	16MY1964	0.01712	(	1232	E 5	16MY1964	C.00348	)
(	1233	B 3	5JN1964	0.02620	(	1234	B 3	18JN1964	0.23898	(	1235	C 7	16JN1964	C.05649	)
(	1439	B 6	5JN1964	3.07692	(	1236	C* 1	8JN1964	C.00350	(	1237	C* 2	8JN1964	C.47693	)
(	1238	D 3	11JN1964	0.21600	(	1239	D 4	11JN1964	C.00580	(	1240	D 6	10JN1964	C.29452	)
(	1241	E 2	13JN1964	C.15968	(	1242	E 3	13JN1964	C.01499	(	1243	E 6	13JN1964	C.36541	)
(	1244	F 1	11JN1964	0.00658	(	1245	F 2	11JN1964	0.02766	(	1246	F 3	11JN1964	C.20917	)
(	1247	B 3	14JL1964	C.04695	(	1248	B 3	24JL1964	0.06897	(	1440	B 6	11JL1964	C.28621	)
(	1441	B 6	24JL1964	4.16309	(	1249	C 3	8JL1964	0.01358	(	1250	C 6	10JL1964	3.59712	)
(	1251	C 7	16JL1964	0.28681	(	1252	C* 1	16JL1964	0.01395	(	1253	C* 2	16JL1964	C.31952	)
(	1254	D 2	15JL1964	7.50814	(	1255	D 5	15JL1964	16.52892	(	1256	E 2	14JL1964	5.12933	)
(	1257	E 3	14JL1964	10.88647	(	1258	F 1	6JL1964	2.80813	(	1259	F 2	6JL1964	3.25359	)
(	1260	F 3	6JL1964	3.34244	(	1262	B 3	17AU1964	0.01260	(	1442	B 6	2AU1964	C.59707	)
(	1443	B 6	16AU1964	0.00988	(	1263	C 7	15AU1964	0.01201	(	1264	C* 1	10AU1964	C.00193	)
(	1265	C* 2	10AU1964	0.01788	(	1266	D 3	18AU1964	4.17427	(	1267	D 6	18AU1964	C.00216	)
(	1268	E 2	15AU1964	2.29784	(	1269	E 3	15AU1964	12.27868	(	1270	F 1	10AU1964	C.00272	)
(	1444	B 6	19SE1964	0.00909	(	1271	C 7	22SE1964	0.01959	(	1272	C* 1	10SE1964	C.00821	)
(	1273	C* 2	10SE1964	0.02688	(	1275	D 2	17SE1964	0.05161	(	1276	D 3	18SE1964	0.06705	)
(	1277	D 4	18SE1964	0.04338	(	1279	E 1	16SE1964	0.03141	(	1281	E 3	16SE1964	4.94447	)
(	1282	E 4	16SE1964	0.05540	(	1283	E 5	16SE1964	1.07270	(	1284	E 6	17SE1964	0.01589	)
(	1285	F 1	15SE1964	0.01747	(	1286	F 2	15SE1964	0.05473	(	1287	F 3	15SE1964	C.02502	)
(	1288	B 3	15OC1964	0.00653	(	1445	B 6	14OC1964	0.11742	(	1289	C 7	14OC1964	0.01319	)
(	1290	C* 1	16OC1964	0.01516	(	1291	C* 2	16OC1964	0.00245	(	1292	D 1	15OC1964	0.03354	)
(	1293	D 2	15OC1964	0.33016	(	1294	D 3	15OC1964	0.11867	(	1295	D 4	15OC1964	0.08324	)
(	1296	D 5	14OC1964	0.06688	(	1297	D 6	14OC1964	C.01333	(	1299	E 2	12OC1964	0.01571	)
(	1300	E 3	13OC1964	0.50116	(	1301	E 4	13OC1964	0.67562	(	1302	E 5	13OC1964	C.78144	)
(	1303	E 6	13OC1964	0.03358	(	1304	F 1	11OC1964	0.01729	(	1305	F 2	11OC1964	C.00518	)
(	1309	F 1	11JL1964	0.00000	(	1310	B 6	NO1964	C.01804	(	1308	C 7	6NO1964	C.03954	)
(	1309	C* 1	10NO1964	0.00804	(	1310	C* 2	10NO1964	0.09524	(	1311	D 1	8NO1964	C.10835	)
(	1312	D 2	8NO1964	0.08692	(	1313	D 3	9NO1964	C.22973	(	1314	D 4	9NO1964	0.14067	)
(	1315	D 5	9NO1964	0.14559	(	1316	D 6	9NO1964	0.00756	(	1317	E 1	6NO1964	C.20679	)
(	1318	E 2	7NO1964	0.11986	(	1319	E 3	7NO1964	0.36656	(	1320	E 4	7NO1964	0.72389	)
(	1321	E 5	7NO1964	C.49160	(	1322	E 6	7NO1964	0.31326	(	1323	F 1	6NO1964	0.01951	)
(	1324	F 2	6NO1964	0.01630	(	1325	F 3	6NO1964	0.00252	(	1337	C 3	2MR1967	C.06761	)
(	1338	C 3	28MR1967	0.20363	(	1339	C 5	28MR1967	0.04677	(	1340	C 7	28MR1967	C.20361	)
(	1341	A 3	19AP1967	0.30374	(	1342	A 4	19AP1967	0.71463	(	1343	A 6	15AP1967	0.00208	)
(	1344	C 3	25AP1967	0.04632	(	1345	C 5	25AP1967	1.77378	(	1346	C 7	21AP1967	C.23367	)
(	1347	E 2	23AP1967	0.91050	(	1348	E 5	23AP1967	0.31254	(	1368	A 3	4MY1967	C.00628	)
(	1369	A 4	4MY1967	0.01864	(	1370	A 6	3MY1967	0.00230	(	1372	C 5	5MY1967	C.00355	)
(	1374	E 2	7MY1967	0.01195	(	1375	E 3	7MY1967	0.00722	(	1376	E 5	6MY1967	C.01124	)

( 1408	A 3	23MY1967	0.03577 )	( 1409	A 4	23MY1967	0.00595 )	( 1410	A 6	24MY1967	C.05074 )
( 1411	C 3	31MY1967	0.00410 )	( 1412	C 5	31MY1967	0.01263 )	( 1413	C 7	25MY1967	C.00316 )
( 1414	E 2	28MY1967	0.02015 )	( 1415	E 3	28MY1967	0.01124 )	( 1416	E 5	28MY1967	C.03936 )
( 1431	A 3	12JN1967	0.72096 )	( 1432	A 4	13JN1967	2.14570 )	( 1433	C 3	17JN1967	5.42566 )
( 1434	C 5	17JN1967	0.83742 )	( 1435	C 7	13JN1967	2.65210 )	( 1436	E 2	15JN1967	C.50659 )
( 1437	E 3	15JN1967	0.27454 )	( 1438	E 5	14JN1967	0.14887 )	( 1446	A 3	11JL1967	4.79429 )
( 1447	A 4	11JL1967	11.46145 )	( 1448	A 6	10JL1967	0.02122 )	( 1449	C 3	16JL1967	12.30464 )
( 1450	C 5	16JL1967	9.46396 )	( 1451	C 7	16JL1967	0.75784 )	( 1452	E 2	14JL1967	3.27841 )
( 1453	E 3	15JL1967	4.42332 )	( 1454	E 5	15JL1967	0.45609 )	( 1504	A 3	28AU1967	C.00247 )
( 1505	A 4	28AU1967	0.17520 )	( 1508	C 3	2SE1967	0.08792 )	( 1509	C 5	2SE1967	2.11971 )
( 1510	C 7	29AU1967	0.07588 )	( 1511	E 2	1SE1967	3.86776 )	( 1512	E 3	1SE1967	7.69593 )
( 1513	E 5	31AU1967	1.77359 )	( 1532	A 3	18SE1967	0.00657 )	( 1535	C 7	20SE1967	0.00966 )
( 1536	E 2	24SE1967	2.29045 )	( 1537	E 3	24SE1967	0.66419 )	( 1538	E 5	23SE1967	C.14915 )
( 1541	E 2	11OC1967	0.01064 )	( 1542	E 3	11OC1967	2.13588 )	( 1379	GS 3	9MY1967	C.00309 )
( 1380	GS 4	9MY1967	0.01345 )	( 1381	GS 5	10MY1967	C.00954 )	( 1382	GS 6	10MY1967	C.00555 )
( 1383	GS 7	10MY1967	0.01871 )	( 1384	GS 8	10MY1967	C.01294 )	( 1385	GS 9	10MY1967	C.00942 )
( 1387	GS11	12MY1967	0.05941 )	( 1388	GS12	12MY1967	0.00603 )	( 1390	GS14	12MY1967	C.00587 )
( 1391	GS15	12MY1967	0.01437 )	( 1392	GS16	12MY1967	C.04007 )	( 1393	GS17	13MY1967	C.01370 )
( 1394	GS18	13MY1967	0.24082 )	( 1395	GS19	13MY1967	0.01996 )	( 1397	GS21	13MY1967	C.00131 )
( 1398	GS22	14MY1967	0.04554 )	( 1554	GS 1	30C1967	0.78275 )	( 1555	GS 2	30C1967	C.01412 )
( 1557	GS 4	30C1967	0.04111 )	( 1558	GS 5	40C1967	0.01189 )	( 1560	GS 8	40C1967	C.02834 )
( 1562	GS10	50C1967	0.00740 )	( 1563	GS11	50C1967	0.01403 )	( 1564	GS12	50C1967	C.00165 )
( 1565	GS13	50C1967	0.01014 )	( 1568	GS16	50C1967	0.00577 )	( 1569	GS17	50C1967	C.00297 )
( 1571	GS19	60C1967	0.00234 )	( 1572	GS20	60C1967	0.00090 )	( 1573	GS21	60C1967	0.01008 )
( 1575	GS28	60C1967	0.00258 )	( 1544	MU 1	20C1967	0.00715 )	( 1547	MS 1	20C1967	C.00798 )
( 1546	LU 1	20C1967	0.01501 )	( 1521	SH 1	18SE1967	0.01154 )	( 1526	MO 1	20SE1967	C.02845 )
( 1527	TR 1	20SE1967	0.03145 )	( 1528	SB 1	20SE1967	0.01444 )	( 1529	KW 1	20SE1967	C.05996 )
( 1530	FR 1	24SE1967	0.01000 )	( 1545	WL 1	20C1967	0.01351 )	( 1549	MQ 1	40C1967	C.01370 )
( 1551	ES 1	50C1967	0.17573 )	( 1552	SM 1	60C1967	0.03301 )	( 1550	MR 1	50C1967	C.18585 )
( 1553	SG 1	60C1967	0.05141 )	( 1428	MU 2	29MY1967	0.00301 )	( 1426	MS 2	29MY1967	C.06299 )
( 1351	MI 2	21AP1967	0.74476 )	( 1427	LU 2	29MY1967	1.01695 )	( 1417	HO 2	22MY1967	C.02617 )
( 1350	BH 2	19AP1967	0.01101 )	( 1425	RA 2	25MY1967	0.17682 )	( 1399	PH 2	5MY1967	C.04081 )
( 1401	MO 2	6MY1967	0.04116 )	( 1402	TR 2	6MY1967	0.04873 )	( 1400	SB 2	6MY1967	0.04765 )
( 1352	KW 2	21AP1967	2.61123 )	( 1353	FR 2	23AP1967	0.01055 )	( 1354	GH 2	25AP1967	C.02071 )
( 1429	WL 2	29MY1967	0.02123 )	( 1403	CA 2	10MY1967	3.13848 )	( 1404	MQ 2	10MY1967	C.05081 )
( 1405	ES 2	12MY1967	0.59585 )	( 1407	SM 2	14MY1967	0.01791 )	( 1349	CI 2	19AP1967	C.08981 )
( 1419	BU 2	23MY1967	0.40278 )	( 1420	IH 2	23MY1967	0.33233 )	( 1421	CH 2	23MY1967	C.20819 )
( 1422	GA 2	23MY1967	0.40873 )	( 1423	WA 2	25MY1967	0.18413 )	( 1424	KN 2	25MY1967	C.26645 )
( 1430	MC 2	12JN1967	0.02467 )								

# *Synedra fasciculata* (Agardh) Kütz.

*Diatoma fasciculata* Agardh, Disp. Alg. Sveciae, p. 35. 1812.

*Synedra fasciculata* (Agardh) Kützling, Bacill., p. 68. 1844.

Cells in girdle view broadly rectangular, often occurring in colonies of 2 or more cells. Valves linear to linear-lanceolate with broadly rounded to subrostrate ends. Specimens from Lake Michigan 74-220μ long, 4-6μ broad. Striae marginal, appearing rather coarse, 12-15 in 10μ. Axial area a broad lanceolate space without ornamentation. No specially defined central area is present. A distinct slime pore is usually visible near one end of each valve.

Most reports of this entity come from waters of high conductivity. In Lake Michigan it has been noted only in polluted harbors and appears to be associated with appreciable chloride contamination.

671 SYFASCIC TOT NO OF STATIONS 7

( 1544	MU 1	20C1967	0.00238 )	( 1521	SH 1	18SE1967	0.00577 )	( 1428	MU 2	29MY1967	C.01808 )
( 1426	MS 2	29MY1967	0.05249 )	( 1417	HO 2	22MY1967	0.00374 )	( 1354	GH 2	25AP1967	C.00345 )
( 1429	WL 2	29MY1967	C.10617 )								

# *Synedra minuscula* Grun.

*Synedra minuscula* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 39, fig. 13. 1881.

Cells in girdle view elongate rectangular. Valves linear-lanceolate to lanceolate with more or less sharply attenuated, sometimes slightly protracted, ends. Specimens from Lake Michigan 15-30μ long, 2-3μ broad. Striae parallel throughout the length of the valve, finely structured but distinct, 18-20 in 10μ. Axial area narrow, distinct. In the Lake Michigan specimens the central area is usually entirely lacking; when present it consists of a small structureless area surrounded by a few shortened striae.

This species is rare in our collections. The specimens observed are probably ultimately derived from periphyton communities. Previous reports indicate that this species reaches its greatest abundance in periphyton communities where it grows attached to filamentous algae.

675 SYMINUSC ICT NO OF STATIONS 61

(60973	CH	1876	0.02362 )	(46910	CH	0C1945	C.00109 )	(46914	CH	19AP1946	0.00320 )
(46924	CH	10MY1946	0.00071 )	(46523	CH	22NO1946	0.00219 )	(46909	CH	MR1947	0.00455 )
(46916	CH	4MY1947	0.00136 )	(46506	CH	MY1947	C.00199 )	(46919	CH	5JN1947	2.26855 )
(46913	CH	6AU1947	0.01046 )	(46922	CH	21AU1947	0.00145 )	(46758	EV	5JN1937	1.39790 )
(46771	EV	11JN1937	0.00951 )	(46743	EV	20JN1937	0.03426 )	(46770	EV	9JL1937	C.01789 )
(46764	EV	17JL1937	0.07252 )	(46757	EV	25JL1937	0.04333 )	(46747	EV	1AU1937	0.02971 )
(46763	EV	23AU1937	0.18263 )	(46752	EV	15SE1937	C.10884 )	(46760	EV	22SE1937	C.0C492 )
(46750	EV	24SE1937	0.09426 )	(46749	EV	12MR1938	0.01214 )	(46768	EV	16MR1938	0.01470 )
(46762	EV	18MR1938	0.04411 )	(46756	EV	27AP1938	0.00168 )	( 1439	B 6	5JN1964	C.0C599 )
( 1441	B 6	24JL1964	0.00220 )	( 1255	D 5	15JL1964	0.00513 )	( 1257	E 3	14JL1964	0.0C718 )
( 1279	E 1	16SE1964	0.00393 )	( 1285	F 1	15SE1964	0.01747 )	( 1286	F 2	15SE1964	C.01095 )
( 1321	E 5	7NO1964	0.0C319 )	( 1370	A 6	3MY1967	0.0C030 )	( 1431	A 3	12JN1967	0.00257 )
( 1449	C 3	16JL1967	0.00382 )	( 145C	C 5	16JL1967	0.00190 )	( 1452	E 2	14JL1967	C.0C0213 )
( 1536	E 2	24SE1967	0.00273 )	( 1540	C 5	40C1967	0.00496 )	( 1542	E 3	11OC1967	0.01017 )
( 1556	GS 3	30C1967	0.00521 )	( 1558	GS 5	40C1967	0.00793 )	( 1560	GS 8	4CC1967	C.0C0472 )
( 1567	GS15	50C1967	0.00159 )	( 1544	MU 1	2CC1967	0.00715 )	( 1547	MS 1	20C1967	0.07186 )
( 1546	LU 1	20C1967	0.26024 )	( 1526	MO 1	20SE1967	0.01707 )	( 1530	FR 1	24SE1967	0.09001 )
( 1545	WL 1	2CC1967	0.73654 )	( 1548	CA 1	3CC1967	0.01272 )	( 1549	MQ 1	40C1967	C.01370 )
( 1551	ES 1	50C1967	0.00799 )	( 1550	MR 1	50C1967	0.09912 )	( 1351	MI 2	21AP1967	C.00310 )
( 1427	LU 2	29MY1967	0.02421 )	( 1417	HC 2	22MY1967	0.00374 )	( 1400	SB 2	6MY1967	C.0C596 )
( 1353	FR 2	23AP1967	C.01055 )	(							

*Synedra montana* Krasske

*Synedra montana* Krasske ex Hustedt in: Rabenhorst, Kryptog.-Fl. Deutschland, 7(2)2:204, fig. 694. 1932.

Cells in girdle view very narrowly linear for most of their length, abruptly expanded near the center. Valves very narrow except at the expanded central portion, often more or less constricted at the center, with subcapitate ends. Specimens from Lake Michigan 80-200 $\mu$  long, 3-4 $\mu$  broad at the widest part, only 1-1.5 $\mu$  broad near the ends. Frustules are often curved. Striae distinct, 12-14 in 10 $\mu$ . Axial area variable, often relatively broad and lanceolate in outline, especially in the larger individuals. Central area completely lacking in our specimens.

The specimens from Lake Michigan have somewhat coarser structure and a greater size range than those originally described from the Alps. The general morphology of the frustule is, however, essentially similar. It appears that this species is much more common in periphyton communities in Lake Michigan than it is in the plankton.

708 SYSPGOK ICT NO OF STATIONS 63

( 3541	CH	1FE1881	0.00978 )	(46517	CH	12JA1946	0.00028 )	(46913	CH	6AU1947	C.01046 )
(46747	EV	1AU1937	0.02971 )	(46763	EV	23AU1937	C.06088 )	(46760	EV	22SE1937	C.01477 )
(46750	EV	24SE1937	0.01414 )	(46749	EV	12MR1938	0.02427 )	(46762	EV	18MR1938	0.04411 )
( 1440	B 6	11JL1964	0.00369 )	( 1257	E 3	14JL1964	0.00239 )	( 1258	F 1	6JL1964	C.0C944 )
( 1259	F 2	6JL1964	0.01239 )	( 1442	B 6	2AU1964	0.00682 )	( 1270	F 1	10AU1964	C.00272 )
( 1298	E 1	12CC1964	0.00269 )	( 1299	E 2	12DC1964	0.00314 )	( 1300	E 3	13OC1964	C.0C716 )
( 1302	E 5	13OC1964	0.0C1620 )	( 1303	E 6	13CC1964	0.00560 )	( 1304	F 1	11OC1964	C.0C988 )
( 1305	F 2	11OC1964	0.01553 )	( 1308	C 7	6NO1964	C.00304 )	( 1309	C* 1	10NO1964	C.02251 )
( 1310	C* 2	10NO1964	0.01134 )	( 1311	D 1	8NO1964	C.02064 )	( 1312	D 2	8NO1964	C.0C1242 )
( 1313	D 3	9NO1964	0.00579 )	( 1314	D 4	9NO1964	0.00861 )	( 1316	D 6	9NO1964	C.0C756 )
( 1317	E 1	6NO1964	0.00574 )	( 1319	E 3	7NO1964	0.00262 )	( 1320	E 4	7NO1964	C.0C4137 )
( 1321	E 5	7NO1964	0.00319 )	( 1322	E 6	7NO1964	0.00667 )	( 1323	F 1	6NO1964	C.0C1254 )
( 1324	F 2	6NO1964	0.00466 )	( 1325	F 3	6NO1964	0.0C904 )	( 1348	E 5	23AP1967	C.0C137 )
( 1432	A 4	13JN1967	0.00511 )	( 1433	C 3	17JN1967	0.00646 )	( 1447	A 4	11JL1967	0.00936 )
( 1449	C 3	16JL1967	0.01146 )	( 1450	C 5	16JL1967	0.00571 )	( 1510	C 7	29AU1967	C.0C316 )
( 1512	E 3	1SE1967	0.01178 )	( 1532	A 3	18SE1967	0.00329 )	( 1533	A 4	19SE1967	0.00464 )
( 1535	C 7	20SE1967	0.00322 )	( 1540	C 5	40C1967	0.00496 )	( 1379	GS 3	9MY1967	C.0C619 )
( 1389	GS13	12MY1967	0.00516 )	( 1393	GS17	13MY1967	0.00822 )	( 1394	ES18	13MY1967	C.0C344 )
( 1554	GS 1	30C1967	0.01779 )	( 1557	GS 4	30C1967	C.00747 )	( 1558	GS 5	40C1967	C.0C1189 )
( 1562	GS10	50C1967	0.00247 )	( 1526	MC 1	20SE1967	0.00569 )	( 1548	CA 1	30C1967	C.0C3816 )
( 1425	RA 2	25MY1967	0.03536 )	( 1403	CA 2	10MY1967	0.01308 )	( 1404	MQ 2	10MY1967	C.0C3811 )

*Synedra ostenfeldii* (Krieger) A. Cleve

*Synedra acus* var. *ostenfeldii* Krieger, Pflanzenforsch., 10:36, fig. 29-2b. 1927.

*Synedra ostenfeldii* (Krieger) A. Cleve-Euler ex Stålberg, Verh. Internat. Verein. Limnol., 9:194. 1940.

Cells in girdle view linear-lanceolate, narrowing slightly from the middle to the rectangular ends. In life several cells are united at one end to form bushy colonies. Specimens from Lake Michigan 80-170 $\mu$  long, 2-3 $\mu$  broad. Valves lanceolate with capitate ends, very lightly silicified. Striae with very delicate structure 16-24 (usually 20-24) in 10 $\mu$ . Axial area relatively broad, indistinctly bordered. Central area lacking in specimens from Lake Michigan.

This species is quite common in the summer flora of Lake Michigan, especially in areas that have undergone some degree of eutrophication. It is variable in morphology and the structures of the valve are so delicate that they are difficult to resolve satisfactorily except under optimal conditions.

702 SYSPECOB TOT NO OF STATICS 271

( 3541	CH	1FE1881	0.01956 )	( 46921	CH	23NC1945	0.00194 )	( 46908	CH	DE1945	0.02014 )
( 46917	CH	12JAI1946	0.00111 )	( 46915	CH	20FE1946	0.07967 )	( 46914	CH	19AP1946	0.01281 )
( 46924	CH	10MY1946	0.00423 )	( 46923	CH	22NO1946	0.00874 )	( 46920	CH	20DE1946	0.00062 )
( 46909	CH	MR1947	0.02277 )	( 46912	CH	AP1947	0.06899 )	( 46916	CH	4MY1947	3.08754 )
( 46906	CH	MY1947	5.60821 )	( 46919	CH	5JUN1947	1.18359 )	( 46907	CH	JL1947	0.70515 )
( 46913	CH	6AU1947	0.01046 )	( 46922	CH	21AU1947	0.10468 )	( 46758	EV	5JUN1937	0.64903 )
( 46771	EV	11JUN1937	0.99853 )	( 46743	EV	20JUN1937	0.18412 )	( 46747	EV	1AU1937	0.00743 )
( 46765	EV	30AU1937	0.01673 )	( 46750	EV	24SE1937	0.00471 )	( 46744	EV	6OC1937	0.01463 )
( 46749	EV	12MR1938	0.08496 )	( 46751	EV	30MR1938	0.01117 )	( 46772	EV	18AP1938	0.04258 )
( 46756	EV	27AP1938	0.89326 )	( 46759	EV	19MY1938	0.07090 )	( 46761	EV	27MY1938	0.10356 )
( 46766	EV	14DE1938	0.03169 )	( 1223	B 3	18MY1964	0.06563 )	( 1224	B 4	18MY1964	0.02549 )
( 1225	C 6	15MY1964	0.24696 )	( 1226	C 7	16MY1964	0.45282 )	( 1227	C* 2	13MY1964	0.05264 )
( 1228	D 2	14MY1964	0.21020 )	( 1229	D 5	14MY1964	0.14802 )	( 1230	E 2	16MY1964	0.24004 )
( 1231	E 3	16MY1964	0.34243 )	( 1232	E 5	16MY1964	0.08696 )	( 1233	B 3	5JUN2964	0.36675 )
( 1234	B 3	18JUN1964	0.12652 )	( 1235	C 7	16JUN1964	0.28808 )	( 1439	B 6	5JUN1964	1.11888 )
( 1236	C* 1	8JUN1964	0.09627 )	( 1237	C* 2	8JUN1964	0.36092 )	( 1238	D 3	11JUN1964	0.28000 )
( 1239	D 4	11JUN1964	0.05570 )	( 1240	D 6	10JUN1964	0.07056 )	( 1241	E 2	13JUN1964	0.15968 )
( 1242	E 3	13JUN1964	0.19033 )	( 1243	E 6	13JUN1964	0.19001 )	( 1244	F 1	11JUN1964	0.04934 )
( 1245	F 2	11JUN1964	0.09681 )	( 1246	F 3	11JUN1964	0.26893 )	( 1247	B 3	14JUN1964	0.02134 )
( 1248	B 3	24JUN1964	0.13794 )	( 1440	B 6	11JUL1964	3.09540 )	( 1441	B 6	24JUL1964	2.62120 )
( 1249	C 3	8JUL1964	0.01358 )	( 1250	C 6	10JUL1964	1.43885 )	( 1251	C 7	16JUL1964	0.15354 )
( 1252	C* 1	16JUL1964	0.01674 )	( 1253	C* 2	16JUL1964	0.44048 )	( 1254	D 2	15JUL1964	2.41333 )
( 1255	D 5	15JUL1964	5.92885 )	( 1256	E 2	14JUL1964	2.17997 )	( 1257	E 3	14JUL1964	7.03433 )
( 1258	F 1	6JUL1964	0.22182 )	( 1259	F 2	6JUL1964	1.19298 )	( 1260	F 3	6JUL1964	0.53588 )
( 1261	B 3	2AU1964	0.02944 )	( 1262	B 3	17AU1964	0.02730 )	( 1442	B 6	2AU1964	1.07472 )
( 1443	B 6	18AU1964	0.01186 )	( 1263	C 7	15AU1964	0.02002 )	( 1265	C* 2	10AU1964	0.04695 )
( 1266	D 3	18AU1964	0.22099 )	( 1267	D 6	18AU1964	0.00216 )	( 1268	E 2	15AU1964	0.42127 )
( 1269	E 3	15AU1964	4.98821 )	( 1444	B 6	19SE1964	0.02122 )	( 1271	C 7	22SE1964	0.02611 )
( 1272	C* 1	10SE1964	0.00821 )	( 1273	C* 2	10SE1964	0.09678 )	( 1274	D 1	17SE1964	0.01877 )
( 1275	D 2	17SE1964	0.01935 )	( 1276	D 3	18SE1964	1.13992 )	( 1277	D 4	18SE1964	0.09295 )
( 1278	D 6	18SE1964	0.01922 )	( 1279	E 1	16SE1964	0.02356 )	( 1280	E 2	16SE1964	0.52420 )
( 1281	E 3	16SE1964	4.39509 )	( 1282	E 4	16SE1964	0.91967 )	( 1283	E 5	16SE1964	1.43435 )
( 1284	E 6	17SE1964	0.05719 )	( 1285	F 1	15SE1964	0.08153 )	( 1286	F 2	15SE1964	0.76620 )
( 1287	F 3	15SE1964	0.19015 )	( 1445	B 6	14OC1964	0.03588 )	( 1289	C 7	14OC1964	0.00879 )
( 1290	C* 1	16OC1964	0.01137 )	( 1293	D 2	15OC1964	0.01415 )	( 1294	D 3	15OC1964	0.12526 )
( 1295	D 4	15OC1964	0.05351 )	( 1296	D 5	14OC1964	0.04328 )	( 1297	D 6	14OC1964	0.03808 )
( 1298	E 1	12OC1964	0.00539 )	( 1299	E 2	12OC1964	0.01257 )	( 1300	E 3	13OC1964	0.22552 )
( 1301	E 4	13OC1964	0.09273 )	( 1302	E 5	13OC1964	0.12957 )	( 1303	E 6	13OC1964	0.01119 )
( 1307	B 6	NO1964	0.01443 )	( 1308	C 7	6NO1964	0.00304 )	( 1309	C* 1	10NO1964	0.00161 )
( 1310	C* 2	10NO1964	0.00680 )	( 1311	D 1	8NO1964	0.00774 )	( 1312	D 2	8NO1964	0.00931 )
( 1313	D 3	9NO1964	0.05405 )	( 1314	D 4	9NO1964	0.04306 )	( 1315	D 5	9NO1964	0.05005 )
( 1316	D 6	9NO1964	0.20777 )	( 1317	E 1	6NO1964	0.01532 )	( 1318	E 2	7NO1964	0.02854 )
( 1319	E 3	7NO1964	0.85356 )	( 1320	E 4	7NO1964	0.28556 )	( 1321	E 5	7NO1964	0.04469 )
( 1322	E 6	7NO1964	0.35325 )	( 1324	F 2	6NO1964	0.00466 )	( 1336	C 3	27JAI1967	0.00385 )
( 1337	C 3	2MR1967	0.08084 )	( 1338	C 3	28MR1967	0.15735 )	( 1339	C 5	28MR1967	0.43649 )
( 1340	C 7	28MR1967	0.66173 )	( 1341	A 3	19AP1967	0.45562 )	( 1342	A 4	19AP1967	1.38957 )
( 1343	A 6	19AP1967	0.12644 )	( 1344	C 3	25AP1967	1.15808 )	( 1345	C 5	25AP1967	2.55244 )
( 1346	C 7	21AP1967	1.02813 )	( 1347	E 2	23AP1967	2.27624 )	( 1348	E 5	23AP1967	0.32077 )
( 1368	A 3	4MY1967	0.65975 )	( 1369	A 4	4MY1967	0.01491 )	( 1370	A 6	3MY1967	0.03222 )
( 1371	C 3	4MY1967	0.00462 )	( 1372	C 5	5MY1967	0.12058 )	( 1373	C 7	5MY1967	0.02567 )
( 1374	E 2	7MY1967	0.00598 )	( 1375	E 3	7MY1967	0.09865 )	( 1376	E 5	6MY1967	0.36541 )
( 1408	A 3	23MY1967	0.31302 )	( 1409	A 4	23MY1967	0.19044 )	( 1410	A 6	24MY1967	0.51308 )
( 1411	C 3	31MY1967	0.14360 )	( 1412	C 5	31MY1967	0.88391 )	( 1413	C 7	25MY1967	0.010108 )
( 1414	E 2	28MY1967	0.47019 )	( 1415	E 3	28MY1967	0.52615 )	( 1416	E 5	28MY1967	0.20556 )
( 1431	A 3	12JUN1967	2.70361 )	( 1432	A 4	13JUN1967	1.78809 )	( 1433	C 3	17JUN1967	2.71283 )
( 1434	C 5	17JUN1967	0.57722 )	( 1435	C 7	13JUN1967	0.73880 )	( 1436	E 2	15JUN1967	3.54610 )
( 1437	E 3	15JUN1967	1.31887 )	( 1438	E 5	14JUN1967	0.64633 )	( 1446	A 3	11JUL1967	0.68490 )
( 1447	A 4	11JUL1967	1.39175 )	( 1448	A 6	10JUL1967	0.01061 )	( 1449	C 3	16JUL1967	5.62971 )
( 1450	C 5	16JUL1967	3.99886 )	( 1451	C 7	16JUL1967	0.15944 )	( 1452	E 2	14JUL1967	1.78822 )
( 1453	E 3	15JUL1967	7.25425 )	( 1454	E 5	15JUL1967	0.28006 )	( 1504	A 3	28AU1967	0.01728 )
( 1505	A 4	28AU1967	0.01031 )	( 1506	A 6	29AU1967	0.00523 )	( 1508	C 3	2SE1967	0.19583 )
( 1509	C 5	2SE1967	0.84789 )	( 1510	C 7	29AU1967	0.04742 )	( 1511	E 2	1SE1967	0.71830 )
( 1512	E 3	1SE1967	12.36846 )	( 1513	E 5	31AU1967	0.78038 )	( 1532	A 2	18SE1967	0.01643 )
( 1533	A 4	19SE1967	0.02321 )	( 1534	A 6	19SE1967	0.00620 )	( 1535	C 7	20SE1967	0.00322 )

( 1536	E 2	24SE1967	0.95435 )	( 1537	E 3	24SE1967	9.05719 )	( 1538	E 5	23SE1967	1.93338 )
( 1540	C 5	40C1967	0.00496 )	( 1541	E 2	11CC1967	0.18626 )	( 1542	E 3	110C1967	2.13588 )
( 1543	E 5	100C1967	0.02872 )	( 1377	GS 1	9MY1967	0.01187 )	( 1378	GS 2	9MY1967	C.04626 )
( 1379	GS 3	9MY1967	0.02476 )	( 1380	GS 4	9MY1967	0.39348 )	( 1381	GS 5	10MY1967	C.12641 )
( 1382	GS 6	10MY1967	0.00833 )	( 1383	GS 7	10MY1967	0.10960 )	( 1384	GS 8	10MY1967	C.12940 )
( 1385	GS 9	10MY1967	0.01648 )	( 1386	GS10	12MY1967	0.01149 )	( 1387	GS11	12MY1967	C.17823 )
( 1388	GS12	12MY1967	0.01207 )	( 1389	GS13	12MY1967	0.00516 )	( 1391	GS15	12MY1967	C.03831 )
( 1392	GS16	12MY1967	0.04623 )	( 1393	GS17	13MY1967	0.04931 )	( 1394	GS18	13MY1967	C.34747 )
( 1395	GS19	13MY1967	0.01996 )	( 1397	GS21	13MY1967	0.00262 )	( 1398	GS22	14MY1967	C.04554 )
( 1554	GS 1	30C1967	0.78275 )	( 1555	GS 2	30C1967	0.05297 )	( 1556	GS 3	30C1967	C.02086 )
( 1557	GS 4	30C1967	0.02616 )	( 1558	GS 5	40C1967	0.03567 )	( 1559	GS 7	40C1967	C.10142 )
( 1560	GS 8	40C1967	0.01889 )	( 1561	GS 9	40C1967	0.00587 )	( 1562	GS10	50C1967	C.04194 )
( 1574	GS22	60C1967	0.00288 )	( 1547	MS 1	20C1967	0.01597 )	( 1520	HO 1	18SE1967	C.01414 )
( 1521	SH 1	18SE1967	0.00577 )	( 1526	MO 1	20SE1967	0.05120 )	( 1527	TR 1	20SE1967	C.01256 )
( 1529	KW 1	20SE1967	0.02398 )	( 1530	FR 1	24SE1967	0.03000 )	( 1545	WL 1	20C1967	C.01351 )
( 1548	CA 1	30C1967	0.02544 )	( 1549	MQ 1	40C1967	C.01370 )	( 1551	ES 1	50C1967	C.01598 )
( 1552	SM 1	60C1967	0.01321 )	( 1553	SG 1	60C1967	0.00734 )	( 1428	MU 2	29MY1967	C.02109 )
( 1526	MS 2	29MY1967	3.86352 )	( 1351	MI 2	21AP1967	0.49651 )	( 1427	LU 2	29MY1967	3.29298 )
( 1417	HO 2	22MY1967	0.10842 )	( 1418	SH 2	22MY1967	0.03110 )	( 1350	BH 2	19AP1967	0.00220 )
( 1425	RA 2	25MY1967	0.20334 )	( 1399	PK 2	5MY1967	1.19695 )	( 1401	MO 2	6MY1967	C.25282 )
( 1402	TR 2	6MY1967	0.40065 )	( 1400	SB 2	6MY1967	0.80415 )	( 1352	KW 2	21AP1967	C.93627 )
( 1353	FR 2	23AP1967	0.36920 )	( 1354	GH 2	25AP1967	0.12773 )	( 1429	WL 2	29MY1967	C.19110 )
( 1403	CA 2	10MY1967	1.32078 )	( 1404	MQ 2	10MY1967	0.07622 )	( 1405	ES 2	12MY1967	C.05805 )
( 1407	SM 2	14MY1967	0.08957 )	( 1349	CI 2	19AP1967	0.36281 )	( 1406	GB 2	13MY1967	C.00270 )
( 1419	BU 2	23MY1967	0.45771 )	( 1420	IH 2	23MY1967	0.52870 )	( 1421	CH 2	23MY1967	C.27758 )
( 1422	GA 2	23MY1967	0.37807 )	( 1423	WA 2	25MY1967	0.25693 )	( 1424	KN 2	25MY1967	C.50626 )
( 1430	MC 2	12JN1967	0.02467 )								

*Synedra parasitica* (Wm. Smith) Hust.

*Odontidium ? parasiticum* Wm. Smith, Syn. British Diat., vol. 2, p. 19, supp. pl. 60, fig. 375. 1856.

*Fragilaria ? parasitica* (Wm. Smith) Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 45, fig. 30. 1881.

*Synedra parasitica* (Wm. Smith) Hustedt in: Pascher, Sussw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 161, fig. 195. 1930.

Cells in girdle view rectangular, on focusing obviously expanded in the central portion. Valves rhombic-lanceolate with much expanded centers and narrow, sharply attenuated to subcapitate ends. Specimens from Lake Michigan 10-25µ long, 4-6µ broad. Axial area broad, lanceolate, without visible ornamentation. Striae finely structured, short 16-19 in 10µ.

This species often grows attached to some of the larger tycho planktonic algae, especially members of the genera *Nitzschia*, *Surirella*, and *Cymatopleura*.

#### 676 SYPARASI TOT NO OF STATIONS 30

( 46921	CH	23NO1946	0.00129 )	( 46915	CH	20FE1946	0.00569 )	( 46914	CH	19AP1946	C.00320 )
( 46924	CH	10MY1946	0.00141 )	( 46923	CH	22NO1946	0.00656 )	( 46920	CH	20DE1946	C.00062 )
( 46905	CH	JA1947	0.00123 )	( 46909	CH	MR1947	0.00911 )	( 46907	CH	JL1947	C.00049 )
( 46758	EV	5JN1937	0.00357 )	( 46747	EV	1AU1937	0.00495 )	( 46765	EV	30AU1937	0.00558 )
( 46767	EV	27OC1937	0.00387 )	( 46749	EV	12MR1938	0.01214 )	( 1242	E 3	13JN1964	C.00150 )
( 1245	F 2	11JN1964	0.00346 )	( 1304	F 1	11OC1964	0.00247 )	( 1453	E 3	15JL1967	0.00253 )
( 1388	GS12	12MY1967	0.00603 )	( 1389	GS13	12MY1967	0.00774 )	( 1392	GS16	12MY1967	C.00308 )
( 1393	GS17	13MY1967	0.00274 )	( 1394	GS18	13MY1967	0.00516 )	( 1395	GS19	13MY1967	C.00235 )
( 1397	GS21	13MY1967	0.00065 )	( 1565	GS13	50C1967	0.03549 )	( 1350	BH 2	19AP1967	C.01542 )
( 1352	KW 2	21AP1967	0.00859 )	( 1404	MQ 2	10MY1967	0.02541 )	( 1405	ES 2	12MY1967	C.00645 )

*Synedra parasitica* var. *subconstricta* (Grun.) Hust.

*Fragilaria parasitica* var. *subconstricta* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 45, fig. 29. 1881.

*Synedra parasitica* var. *subconstricta* (Grun.) Hustedt in: Pascher, Sussw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 161, fig. 196. 1930.

Valves more or less constricted in the middle, other morphologic features of the frustule and ornamentation of the valve essentially similar to the nominate variety.

#### 677 SYPARAVS TOT NO OF STATIONS 2

( 1341	A 3	19AP1967	0.00108 )	( 1350	BH 2	19AP1967	0.04405 )
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*Synedra pulchella* Ralfs

*Synedra pulchella* Ralfs ex Kützling, Bacill., p. 68, pl. 29, fig. 87. 1844.

Cells in girdle view rectangular-lanceolate, slightly narrowed toward the ends. Valves lanceolate to linear-lanceolate with attenuated, rostrate or subcapitate ends. Specimens from Lake Michigan 46-100 $\mu$  long, 5-7 $\mu$  broad. Valves strongly silicified, all structures distinct and robust in appearance. Axial area narrow, slightly lanceolate, broader toward the mid-portion of the valve. Central area quadrate extending entirely across the mid-portion of the valve, distinctly thickened at the margins with an ovoid, less thickened region occupying the center. This area sometimes contains ornamentation appearing as partially developed striae. Striae well defined, distinctly punctate, parallel through most of the length of the valve, becoming slightly radiate near the apices, 12-16 in 10 $\mu$ .

This species is most often reported from mineralized inland waters or from brackish waters. It is very rare in Lake Michigan at the present time but can be expected to become more abundant in areas receiving heavy pollution from wastes high in chlorides.

678 SYPULCHE TOT NO OF STATIONS 5

( 1504	A 3	28AU1967	0.00247 )	( 1428	MU 2	29MY1967	0.01205 )	( 1426	PS 2	29MY1967	C.01050 )
( 1350	BH 2	19AP1967	0.00220 )	( 1406	GB 2	13MY1967	0.00539 )	(			

*Synedra rumpens* Kütz.

*Synedra rumpens* Kützling, Bacill., p. 69, pl. 16, fig. 6(6), figs. 4-5. 1844.

Cells in girdle view linear, very slightly narrowed toward the ends. Valves linear-lanceolate with somewhat protracted, rostrate to subcapitate ends. Specimens from Lake Michigan 30-70 $\mu$  long, 2-4 $\mu$  broad. Axial area narrow, linear through most of the length of the valve, in some specimens widened near the midportion of the valve. Central area a structureless transverse fascia extending to the margins of the valve, not visibly thickened.

675 SYRUPPEN TOT NO OF STATIONS 46

( 60973	CH	1876	0.07085 )	( 46517	CH	12JA1946	0.00083 )	( 46914	CH	19AP1946	0.00214 )
( 46920	CH	20DE1946	0.00123 )	( 46516	CH	4MY1947	0.00034 )	( 46919	CH	5JN1947	C.00455 )
( 46922	CH	21AU1947	C.00097 )	( 46764	EV	17JL1937	0.00806 )	( 46747	EV	1AU1937	C.00743 )
( 46765	EV	30AU1937	0.00558 )	( 46752	EV	15SE1937	0.02177 )	( 46750	EV	24SE1937	C.00471 )
( 46749	EV	12MR1938	0.01214 )	( 46768	EV	16MR1938	0.01470 )	( 46756	EV	27AP1938	C.00168 )
( 1284	E 6	17SE1964	0.00635 )	( 1302	E 5	13OC1964	C.02429 )	( 1311	D 1	8NO1964	0.00516 )
( 1313	D 3	9NO1964	0.00579 )	( 1314	D 4	9NO1964	C.00574 )	( 1317	E 1	6NO1964	C.00383 )
( 1318	E 2	7NO1964	0.00380 )	( 1319	E 3	7NO1964	C.01571 )	( 1320	E 4	7NO1964	C.01861 )
( 1321	E 5	7NO1964	0.00638 )	( 1322	E 6	7NO1964	C.00667 )	( 1324	F 2	6NO1964	C.00466 )
( 1342	A 4	19AP1967	0.00180 )	( 1371	C 3	4MY1967	C.00231 )	( 1395	GS19	13MY1967	C.00117 )
( 1396	GS20	13MY1967	0.00148 )	( 1574	GS22	6OC1967	0.00288 )	( 1544	MU 1	20C1967	C.00715 )
( 1547	MS 1	20C1967	0.00798 )	( 1522	BH 1	18SE1967	C.00365 )	( 1527	TR 1	20SE1967	0.00629 )
( 1531	GH 1	25SE1967	0.00845 )	( 1545	WL 1	20C1967	0.01351 )	( 1549	MQ 1	4OC1967	C.01370 )
( 1550	MR 1	5OC1967	0.18585 )	( 1428	MU 2	29MY1967	0.01205 )	( 1427	LU 2	29MY1967	0.02421 )
( 1417	HO 2	22MY1967	0.01122 )	( 1350	BH 2	19AP1967	C.03084 )	( 1352	FR 2	23AP1967	C.01055 )
( 1354	GH 2	25AP1967	0.00863 )	(							

*Synedra rumpens* var. *familiaris* (Kütz.) Hust.

*Synedra familiaris* Kützling, Bacill., p. 68, pl. 15, fig. 12. 1844.

*Synedra rumpens* var. *familiaris* (Kütz.) Hustedt in: Pascher, Sussw.-Fl. Mitteleuropas, Heft 10, Aufl. 2, p. 156, fig. 176. 1930.

Valves linear-lanceolate, somewhat constricted in the middle and slightly swollen on either side of the central area. Striae parallel throughout, about 18-20 in 10 $\mu$ , appearing more delicate than in the nominate variety.

680 SYRUMPVF TOT NO OF STATICS 9

( 46757	EV	25JL1937	0.00481 )	( 46763	EV	23AU1937	0.12175 )	( 46761	EV	27MY1938	0.00273 )
( 1236	C 1	8JN1964	0.00175 )	( 1522	BH 1	18SE1967	0.00182 )	( 1526	MO 1	20SE1967	0.01138 )
( 1527	TR 1	20SE1967	0.00629 )	( 1428	MU 2	29MY1967	0.00301 )	( 1350	BH 2	19AP1967	0.00220 )

*Synedra rumpens* var. *fragilarioides* Grun.

*Synedra rumpens* var. *fragilarioides* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 40, fig. 12. 1881.

Frustules more strongly silicified than in the nominate variety. Striae 10-12 in 10 $\mu$ , visibly cross-lineate. Central area appears thickened and often contains irregular markings appearing as partially developed striae. In some specimens the central area is somewhat expanded. Shape, size range and general morphology of the frustule essentially similar to the nominate variety.

682 SYRUMPVR TOT NO OF STATICS 8

( 1235	C 7	16JN1964	0.00565 )	( 1240	D 6	10JN1964	0.00767 )	( 1243	E 6	13JN1964	0.00209 )
( 1338	C 3	28MR1967	0.00132 )	( 1341	A 3	19AP1967	0.00108 )	( 1343	A 6	19AP1967	0.00069 )
( 1346	C 7	21AP1967	0.00134 )	( 1408	A 3	23MY1967	0.00447 )	(			

*Synedra rumpens* var. *meneghiniana* Grun.

*Synedra rumpens* var. ? *meneghiniana* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 40, fig. 13. 1881.

Valves linear with rostrate ends. Striae 13-15 in 10 $\mu$ , without visible substructure. Other morphologic features of the frustule essentially similar to the nominate variety.

These entities are all found in periphyton communities in a variety of habitats. Occasional specimens are noted in offshore plankton collections from Lake Michigan.

681 SYRUMPVM TOT NO OF STATICS 1

( 1341	A 3	19AP1967	0.00217 )	(
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*Synedra ulna* (Nitz.) Ehr.

*Bacillaria ulna* Nitzsch, Neue Schrift. Naturf. Ges. Halle, 3(1):99, pl. 5. 1817.

*Synedra ulna* (Nitz.) Ehrenberg, Ber. Akad. Wiss. Berlin 1836:53. 1836.

Cells in girdle view very elongate-rectangular, usually slightly expanded at the ends. Valves linear to linear-lanceolate with rostrate ends. Specimens from Lake Michigan 75-220 $\mu$  long, 5-8 $\mu$  broad. Axial area narrow, linear. Central area usually a hyaline fascia reaching both margins of the valve, in some specimens reduced or entirely lacking. Striae parallel throughout, finely but distinctly lineate-punctate, 8-12 in 10 $\mu$ . A distinct "jelly pore" is present at one end of each valve.

This species finds its primary habitat in the periphyton but is often found in plankton collections, often in considerable abundance. Numerous varieties have been described. The majority of these are also usually found in periphyton communities but some are adapted to planktonic existence.

683 SYULNA TOT NO CF STATIONS 127											
( 3540	CH	11MY1879	0.01398 )	( 3541	CH	1FE1881	0.12716 )	(46910	CH	0C1945	C.00109 )
(46921	CH	23NO1945	0.00388 )	(46517	CH	12JA1946	0.00083 )	(46915	CH	20FE1946	C.00569 )
(46914	CH	19AP1946	0.00107 )	(46524	CH	10MY1946	0.00282 )	(46923	CH	22NO1946	C.01530 )
(46920	CH	20DE1946	0.01048 )	(46505	CH	JA1947	0.00613 )	(46912	CH	AP1947	C.01150 )
(46916	CH	4MY1947	0.00645 )	(46506	CH	MY1947	0.00199 )	(46919	CH	5JN1947	C.05766 )
(46907	CH	JL1947	0.00049 )	(46513	CH	6AU1947	0.03138 )	(46922	CH	21AU1947	C.00679 )
(46758	EV	5JN1937	0.64903 )	(46771	EV	11JN1937	0.03566 )	(46743	EV	20JN1937	C.43676 )
(46745	EV	3JL1937	0.04180 )	(46770	EV	9JL1937	0.23855 )	(46764	EV	17JL1937	C.00670 )
(46757	EV	25JL1937	0.06740 )	(46747	EV	1AU1937	0.13862 )	(46763	EV	23AU1937	C.04058 )
(46752	EV	15SE1937	0.04354 )	(46760	EV	22SE1937	0.01477 )	(46750	EV	24SE1937	C.01414 )
(46748	EV	13OC1937	0.02135 )	(46767	EV	27OC1937	0.01160 )	(46749	EV	12MR1938	C.01214 )
(46768	EV	16MR1938	0.01470 )	(46762	EV	18MR1938	0.06617 )	(46772	EV	18AP1938	C.00710 )
(46756	EV	27AP1938	0.00336 )	(46761	EV	27MY1938	0.01090 )	(46766	EV	14DE1938	C.03169 )
( 1225	C 6	15MY1964	0.00392 )	( 1226	C 7	16MY1964	0.00381 )	( 1230	E 2	16MY1964	C.00889 )
( 1231	E 3	16MY1964	0.00734 )	( 1232	E 5	16MY1964	0.00174 )	( 1236	C* 1	8JN1964	C.00175 )
( 1240	D 6	10JN1964	0.00153 )	( 1243	E 6	13JN1964	0.00209 )	( 1244	F 1	11JN1964	C.00329 )
( 1245	F 2	11JN1964	0.00346 )	( 1246	F 3	11JN1964	0.00598 )	( 1254	D 2	15JL1964	C.00192 )
( 1258	F 1	6JL1964	0.00472 )	( 1259	F 2	6JL1964	0.00310 )	( 1260	F 3	6JL1964	C.00764 )
( 1267	D 6	18AU1964	0.00432 )	( 1270	F 1	10AU1964	0.00272 )	( 1272	C* 1	10SE1964	C.00821 )
( 1284	E 6	17SE1964	0.00318 )	( 1285	F 1	15SE1964	0.00582 )	( 1258	E 1	12OC1964	C.00269 )
( 1304	F 1	11OC1964	0.00494 )	( 1337	C 3	2MR1967	0.00147 )	( 1338	C 3	28MR1967	C.00132 )
( 1341	A 3	19AP1967	0.00868 )	( 1342	A 4	19AP1967	0.00361 )	( 1347	E 2	23AP1967	C.00325 )
( 1371	C 3	4MY1967	0.00231 )	( 1373	C 7	5MY1967	0.00285 )	( 1413	C 7	25MY1967	C.00316 )
( 1416	E 5	28MY1967	0.00656 )	( 1431	A 3	12JN1967	0.00257 )	( 1449	C 3	16JL1967	C.00764 )
( 1452	E 2	14JL1967	0.00635 )	( 1453	E 3	15JL1967	0.00253 )	( 1537	E 3	24SE1967	C.00431 )
( 1378	GS 2	5MY1967	0.00421 )	( 1386	GS10	12MY1967	0.00287 )	( 1387	GS11	12MY1967	C.02772 )
( 1388	GS12	12MY1967	0.03017 )	( 1389	GS13	12MY1967	0.00774 )	( 1390	GS14	12MY1967	C.01174 )
( 1392	GS16	12MY1967	0.02157 )	( 1394	GS18	13MY1967	0.00860 )	( 1396	GS20	13MY1967	C.00222 )
( 1397	GS21	13MY1967	0.00065 )	( 1555	GS 2	30C1967	C.00353 )	( 1559	GS 7	40C1967	C.00350 )
( 1561	GS 9	40C1967	0.00587 )	( 1567	GS15	50C1967	0.00318 )	( 1569	GS17	50C1967	C.00446 )
( 1570	GS18	50C1967	0.00992 )	( 1571	GS19	60C1967	C.00234 )	( 1572	GS20	60C1967	C.00270 )
( 1573	GS21	60C1967	0.00112 )	( 1575	GS28	60C1967	0.01032 )	( 1544	MU 1	20C1967	C.00477 )
( 1547	MS 1	20C1967	0.00798 )	( 1520	HC 1	18SE1967	0.01414 )	( 1521	SH 1	18SE1967	C.00577 )
( 1522	BH 1	18SE1967	0.04559 )	( 1526	MC 1	20SE1967	0.00569 )	( 1527	TR 1	20SE1967	C.00629 )
( 1529	KW 1	20SE1967	0.01199 )	( 1531	GH 1	25SE1967	0.20287 )	( 1545	WL 1	20C1967	C.00676 )
( 1549	MQ 1	40C1967	0.06852 )	( 1550	MR 1	50C1967	C.06994 )	( 1428	MU 2	29MY1967	C.09039 )
( 1426	MS 2	29MY1967	0.45144 )	( 1351	MI 2	21AP1967	0.05586 )	( 1427	LU 2	29MY1967	C.09685 )
( 1417	HO 2	22MY1967	0.16824 )	( 1418	SH 2	22MY1967	0.01555 )	( 1350	BH 2	19AP1967	C.35867 )
( 1425	RA 2	25MY1967	0.01768 )	( 1399	SW 2	5MY1967	C.01360 )	( 1401	MD 2	6MY1967	C.01764 )
( 1402	TR 2	6MY1967	0.15703 )	( 1400	SB 2	6MY1967	1.90612 )	( 1353	FR 2	23AP1967	C.01055 )
( 1354	GH 2	25AP1967	0.19677 )	( 1429	WL 2	29MY1967	C.07432 )	( 1403	CA 2	10MY1967	C.01308 )
( 1404	MQ 2	10MY1967	0.29217 )	( 1405	ES 2	12MY1967	0.03870 )	( 1406	GB 2	13MY1967	C.00539 )
( 1423	WA 2	25MY1967	0.00428 )	(							

*Synedra ulna* var. *aequalis* (Kütz.) Hust.

*Frustulia aequalis* Kütz. in: Syn. Diat., p. 18, fig. 30. 1834.

*Synedra ulna* var. *aequalis* (Kütz.) Hust. in: Rabenhorst, Kryptog.-Fl. Deutschland, 7(2):199, fig. 691A, d. 1932.

Valves linear without special morphological demarcation of the ends. Other characteristics essentially similar to the nominate variety.

684 SYULNAVA TCT KC CF STATIONS 6											
( 3540	CH	11MY1879	0.00466 )	(46743	EV	20JN1937	0.01285 )	(46747	EV	1AU1937	C.00743 )
( 1522	BH 1	18SE1967	0.00182 )	( 1531	GH 1	25SE1967	0.00845 )	( 1350	BH 2	19AP1967	C.01982 )

*Synedra ulna* var. *amphirhynchus* (Ehr.) Grun.

*Synedra amphirhynchus* Ehrenberg, Phys. Abh. Akad. Wiss. Berlin, 1841:425, pl. 3(1), fig. 25. 1843.

*Synedra ulna* var. *amphirhynchus* (Ehr.) Grunow, Verh. Zool.-Bot. Ges. Wien, 12:397. 1862.

Valves lanceolate with very narrow and much produced rostrate to capitate ends. Other morphologic features of the frustule and ornamentation of the valve essentially similar to the nominate variety. Specimens so far observed from Lake Michigan are in the lower size range (75-190µ long).

This entity is rare in our collections and the specimens observed are probably derived from periphyton communities.

688 SYULNAVM TOT NO OF STATICS												7
( 3540	CH	11MY1879	0.00932 )	( 3541	CH	1FE1881	C.02935 )	( 3507	CH	19FE1881	C.01132 )	
( 1378	GS 2	9MY1967	0.00421 )	( 1380	GS 4	9MY1967	0.00168 )	( 1393	GS17	13MY1967	C.00274 )	
( 1404	MQ 2	10MY1967	0.01270 )	(								

*Synedra ulna* var. *chaseana* Thomas

*Synedra ulna* var. *chaseana* Thomas in: Walker and Chase, New and rare diatoms, Ser. 1, p. 4, pl. 2, fig. 3. 1886.

Valves very elongate, narrowly linear-lanceolate, with slightly expanded, subcapitate ends which are cuneately rounded at the tip. Central area usually completely lacking, sometimes marked by a few less-developed striae in the mid-portion of the valve. Specimens from Lake Michigan 380-600 $\mu$  long, only 3-5 $\mu$  broad. Striae coarse, 8-11 in 10 $\mu$ .

This entity is euplanktonic and is abundant in many collections from Lake Michigan. It may be viewed as the extreme adaptation to planktonic existence in this group. In some respects its morphology is distinct from the *S. ulna* and some authors (Boyer 1927) consider it to be a separate species.

685 SYULNAVC ICT NG GF STATIONS 317

(60973	CH	1876	0.25980	( 3540	CH	11MY1879	2.02208	( 3541	CH	1FE1881	8.92106
( 3507	CH	19FE1881	2.51302	(46510	CH	0C1945	0.78101	(46921	CH	23NO1945	1.72348
(46908	CH	DE1945	0.93656	(46517	CH	12JA1946	0.99114	(46915	CH	20FE1946	1.47954
(46914	CH	19AP1946	0.34703	(46924	CH	10MY1946	0.41269	(46923	CH	22NO1946	1.27858
(46920	CH	20DE1946	0.32042	(46505	CH	JA1947	0.51845	(46909	CH	MR1947	1.77588
(46912	CH	AP1947	1.06933	(46516	CH	4MY1947	1.14680	(46906	CH	MY1947	0.73338
(46919	CH	5JN1947	0.69043	(46507	CH	JL1947	1.60262	(46913	CH	6AU1947	1.63163
(46922	CH	21AU1947	0.34652	(46758	EV	5JN1937	2.19670	(46771	EV	11JN1937	3.06215
(46743	EV	20JN1937	2.63766	(46745	EV	3JL1937	4.30512	(46770	EV	9JL1937	1.44322
(46764	EV	17JL1937	1.65995	(46757	EV	25JL1937	2.02205	(46747	EV	1AU1937	2.07936
(46763	EV	23AU1937	0.68994	(46765	EV	30AU1937	0.59119	(46769	EV	7SE1937	1.43291
(46752	EV	15SE1937	1.21898	(46760	EV	22SE1937	0.60564	(46750	EV	24SE1937	0.72583
(46744	EV	6OC1937	0.22435	(46748	EV	13OC1937	0.72588	(46767	EV	27OC1937	0.43325
(46745	EV	12MR1938	0.87389	(46768	EV	16MR1938	1.17595	(46762	EV	18MR1938	3.46273
(46751	EV	30MR1938	2.30012	(46772	EV	18AP1938	0.15614	(46756	EV	27AP1938	0.51715
(46759	EV	19MY1938	0.24983	(46761	EV	27MY1938	0.86667	(46766	EV	14DE1938	0.47529
( 1223	B 3	18MY1964	1.42199	( 1224	B 4	18MY1964	2.19586	( 1225	C 6	15MY1964	3.56723
( 1226	C 7	16MY1964	0.89041	( 1227	C* 2	13MY1964	1.84231	( 1228	D 2	14MY1964	2.58861
( 1229	D 5	14MY1964	4.73663	( 1230	E 2	16MY1964	1.45207	( 1231	E 3	16MY1964	2.16711
( 1232	E 5	16MY1964	2.75836	( 1233	B 3	5JN2964	2.33383	( 1234	B 3	18JN1964	0.78722
( 1235	C 7	16JN1964	1.84709	( 1439	B 6	5JN1964	1.77023	( 1236	C* 1	8JN1964	1.51229
( 1237	C* 2	8JN1964	3.06780	( 1238	D 3	11JN1964	2.70800	( 1239	D 4	11JN1964	1.19060
( 1240	D 6	10JN1964	2.00334	( 1241	E 2	13JN1964	1.51699	( 1242	E 3	13JN1964	2.00632
( 1243	E 6	13JN1964	3.89627	( 1244	F 1	11JN1964	1.33110	( 1245	F 2	11JN1964	1.03727
( 1246	F 3	11JN1964	1.00400	( 1247	B 3	14JL1964	1.39156	( 1248	B 3	24JL1964	3.03460
( 1440	B 6	11JL1964	3.61131	( 1441	B 6	24JL1964	6.26886	( 1249	C 3	8JL1964	1.90114
( 1250	C 6	10JL1964	5.36896	( 1251	C 7	16JL1964	1.52095	( 1252	C* 1	16JL1964	1.25986
( 1253	C* 2	16JL1964	5.32682	( 1254	D 2	15JL1964	4.11032	( 1255	D 5	15JL1964	6.46784
( 1256	E 2	14JL1964	3.07760	( 1257	E 3	14JL1964	4.01962	( 1258	F 1	6JL1964	2.20403
( 1259	F 2	6JL1964	1.73525	( 1260	F 3	6JL1964	1.87176	( 1261	B 3	2AU1964	0.37287
( 1262	B 3	17AU1964	0.29399	( 1442	B 6	2AU1964	6.68714	( 1443	B 6	16AU1964	2.76756
( 1263	C 7	15AU1964	0.56045	( 1264	C* 1	10AU1964	0.45181	( 1265	C* 2	10AU1964	4.69452
( 1266	D 3	18AU1964	7.69608	( 1267	D 6	18AU1964	0.10808	( 1268	E 2	15AU1964	4.55569
( 1269	E 3	15AU1964	5.37192	( 1270	F 1	10AU1964	1.04833	( 1444	B 6	19SE1964	7.62891
( 1271	C 7	22SE1964	0.52882	( 1272	C* 1	10SE1964	2.29857	( 1273	C* 2	10SE1964	3.76364
( 1274	D 1	17SE1964	1.09792	( 1275	D 2	17SE1964	1.06445	( 1276	D 3	18SE1964	13.03084
( 1277	D 4	18SE1964	3.03631	( 1278	D 6	18SE1964	2.86714	( 1279	E 1	16SE1964	2.19892
( 1280	E 2	16SE1964	10.17088	( 1281	E 3	16SE1964	11.16823	( 1282	E 4	16SE1964	8.26593
( 1283	E 5	16SE1964	10.87409	( 1284	E 6	17SE1964	0.66724	( 1285	F 1	15SE1964	6.25473
( 1286	F 2	15SE1964	6.12960	( 1287	F 3	15SE1964	3.97318	( 1288	B 3	15OC1964	0.06313
( 1445	B 6	14OC1964	0.68493	( 1289	C 7	14OC1964	3.69377	( 1290	C* 1	16CC1964	0.13644
( 1291	C* 2	16OC1964	1.60951	( 1292	D 1	15OC1964	0.14162	( 1293	D 2	15OC1964	1.65079
( 1294	D 3	15OC1964	2.76890	( 1295	D 4	15OC1964	1.39137	( 1296	D 5	14OC1964	0.68852
( 1297	D 6	14OC1964	3.01969	( 1298	E 1	12OC1964	0.65974	( 1299	E 2	12OC1964	4.53032
( 1300	E 3	13OC1964	9.37176	( 1301	E 4	13OC1964	5.97898	( 1302	E 5	13OC1964	4.72103
( 1303	E 6	13OC1964	2.89936	( 1304	F 1	11OC1964	1.84234	( 1305	F 2	11OC1964	1.20760
( 1306	F 3	11OC1964	2.84384	( 1307	B 6	NO1964	0.50512	( 1308	C 7	6NO1964	0.38626
( 1309	C* 1	10NO1964	0.02733	( 1310	C* 2	10NO1964	0.34240	( 1311	D 1	8NO1964	0.24251
( 1312	D 2	8NO1964	0.43458	( 1313	D 3	9NO1964	1.35135	( 1314	D 4	9NO1964	1.48709
( 1315	D 5	9NO1964	1.16469	( 1316	D 6	9NO1964	3.34693	( 1317	E 1	6NO1964	0.24891
( 1318	E 2	7NO1964	1.77691	( 1319	E 3	7NO1964	2.68636	( 1320	E 4	7NO1964	3.28025
( 1321	E 5	7NO1964	2.10049	( 1322	E 6	7NO1964	2.79935	( 1323	F 1	6NO1964	0.73171
( 1324	F 2	6NO1964	1.08541	( 1325	F 3	6NO1964	1.49878	( 1336	C 3	27JA1967	0.37163
( 1337	C 3	2MR1967	2.53678	( 1338	C 3	28MR1967	2.28222	( 1339	C 5	28MR1967	2.91202
( 1340	C 7	28MR1967	1.01804	( 1341	A 3	19AP1967	1.56862	( 1342	A 4	19AP1967	2.66950
( 1343	A 6	19AP1967	0.17785	( 1344	C 3	25AP1967	2.62387	( 1345	C 5	25AP1967	1.45411
( 1346	C 7	21AP1967	2.11769	( 1347	E 2	23AP1967	1.97382	( 1348	E 5	23AP1967	0.89650
( 1368	A 3	4MY1967	2.63902	( 1369	A 4	4MY1967	2.60912	( 1370	A 6	3MY1967	0.40281
( 1371	C 3	4MY1967	2.15615	( 1372	C 5	5MY1967	4.46872	( 1373	C 7	5MY1967	2.66416
( 1374	E 2	7MY1967	4.04662	( 1375	E 3	7MY1967	4.04245	( 1376	E 5	6MY1967	1.96762
( 1408	A 3	23MY1967	1.56508	( 1409	A 4	23MY1967	6.24888	( 1410	A 6	24MY1967	1.44339
( 1411	C 3	31MY1967	6.12973	( 1412	C 5	31MY1967	4.71420	( 1413	C 7	25MY1967	2.50813
( 1414	E 2	28MY1967	5.32662	( 1415	E 3	28MY1967	4.19571	( 1416	E 5	28MY1967	2.96967
( 1431	A 3	12JN1967	1.80240	( 1432	A 4	13JN1967	4.64902	( 1433	C 3	17JN1967	3.91422
( 1434	C 5	17JN1967	1.95598	( 1435	C 7	13JN1967	2.35532	( 1436	E 2	15JN1967	6.41916
( 1437	E 3	15JN1967	5.27548	( 1438	E 5	11JL1967	2.03341	( 1446	A 3	11JL1967	1.36980
( 1447	A 4	11JL1967	3.76977	( 1448	A 6	10JL1967	1.81786	( 1449	C 3	16JL1967	6.06061
( 1450	C 5	16JL1967	5.59840	( 1451	C 7	16JL1967	1.37790	( 1452	E 2	14JL1967	3.87448
( 1453	E 3	15JL1967	4.60026	( 1454	E 5	15JL1967	1.12022	( 1504	A 3	28AU1967	0.69127
( 1505	A 4	28AU1967	0.07730	( 1506	A 6	29AU1967	0.01046	( 1508	C 3	2SE1967	0.69938

( 1509	C 5	25E1967	3.76501 )	( 1510	C 7	29AU1967	0.12962 )	( 1511	E 2	15E1967	3.57921 )
( 1512	E 3	15E1967	8.61473 )	( 1513	E 5	31AU1967	5.90858 )	( 1532	A 3	18SE1967	0.02628 )
( 1533	A 4	19SE1967	0.03249 )	( 1534	A 6	19SE1967	0.00931 )	( 1535	C 7	20SE1967	0.04506 )
( 1536	E 2	24SE1967	3.43568 )	( 1537	E 3	24SE1967	11.27404 )	( 1538	E 5	23SE1967	3.61266 )
( 1539	C 3	40C1967	0.00503 )	( 1540	C 5	40C1967	0.01985 )	( 1541	E 2	110C1967	0.50024 )
( 1542	E 3	110C1967	4.50570 )	( 1543	E 5	100C1967	0.25858 )	( 1377	GS 1	9MY1967	5.35919 )
( 1378	GS 2	9MY1967	2.64917 )	( 1379	GS 3	9MY1967	0.33424 )	( 1380	GS 4	9MY1967	1.25441 )
( 1381	GS 5	10MY1967	1.11148 )	( 1382	GS 6	10MY1967	0.64948 )	( 1383	GS 7	10MY1967	0.58811 )
( 1384	GS 8	10MY1967	0.51761 )	( 1385	GS 9	10MY1967	1.21024 )	( 1386	GS10	12MY1967	0.60327 )
( 1387	GS11	12MY1967	2.21800 )	( 1388	GS12	12MY1967	2.74510 )	( 1389	GS13	12MY1967	0.33262 )
( 1390	GS14	12MY1967	0.19965 )	( 1391	GS15	12MY1967	0.37351 )	( 1392	GS16	12MY1967	0.08938 )
( 1393	GS17	13MY1967	0.24107 )	( 1394	GS18	13MY1967	0.05333 )	( 1395	GS19	13MY1967	0.00470 )
( 1396	GS20	13MY1967	0.00592 )	( 1397	GS21	13MY1967	0.00523 )	( 1398	GS22	14MY1967	1.56055 )
( 1554	GS 1	30C1967	3.32313 )	( 1555	GS 2	30C1967	1.23588 )	( 1556	GS 3	30C1967	0.07822 )
( 1557	GS 4	30C1967	0.57922 )	( 1558	GS 5	40C1967	0.67782 )	( 1559	GS 7	40C1967	0.53508 )
( 1560	GS 8	40C1967	0.33061 )	( 1561	GS 9	40C1967	0.37565 )	( 1562	GS10	50C1967	0.86347 )
( 1563	GS11	50C1967	1.30945 )	( 1564	GS12	50C1967	0.02963 )	( 1565	GS13	50C1967	0.03549 )
( 1566	GS14	50C1967	0.36691 )	( 1567	GS15	50C1967	0.81608 )	( 1568	GS16	50C1967	0.12698 )
( 1569	GS17	50C1967	0.06243 )	( 1570	GS18	50C1967	0.06942 )	( 1571	GS19	60C1967	0.00820 )
( 1573	GS21	60C1967	0.00672 )	( 1574	GS22	60C1967	1.61077 )	( 1575	GS28	60C1967	0.00903 )
( 1544	MU 1	20C1967	0.00715 )	( 1547	MS 1	20C1967	0.11178 )	( 1546	LU 1	20C1967	0.06002 )
( 1520	HO 1	18SE1967	0.00943 )	( 1521	SH 1	18SE1967	0.00577 )	( 1523	RA 1	19SE1967	0.00923 )
( 1525	PH 1	20SE1967	0.05570 )	( 1526	MO 1	20SE1967	0.24464 )	( 1527	TR 1	20SE1967	0.07547 )
( 1528	SB 1	20SE1967	0.23101 )	( 1529	KW 1	20SE1967	0.33577 )	( 1530	FR 1	24SE1967	0.35003 )
( 1548	CA 1	30C1967	0.01272 )	( 1549	MQ 1	40C1967	0.32890 )	( 1551	ES 1	50C1967	0.03994 )
( 1552	SM 1	60C1967	0.09904 )	( 1550	MR 1	50C1967	0.04956 )	( 1553	SC 1	60C1967	0.02938 )
( 1428	MU 2	29MY1967	0.07533 )	( 1426	MS 2	29MY1967	1.79527 )	( 1351	PI 2	21AP1967	0.33204 )
( 1427	LU 2	25MY1967	4.39467 )	( 1417	HO 2	22MY1967	0.02243 )	( 1418	SH 2	22MY1967	0.54432 )
( 1430	BH 2	19AP1967	0.35242 )	( 1425	RA 2	25MY1967	0.50393 )	( 1399	PW 2	5MY1967	1.66621 )
( 1401	MO 2	6MY1967	0.75259 )	( 1402	TR 2	6MY1967	0.57938 )	( 1400	SB 2	6MY1967	1.64999 )
( 1352	KW 2	21AP1967	0.30064 )	( 1353	FR 2	23AP1967	3.25949 )	( 1354	CH 2	25AP1967	0.05696 )
( 1429	WL 2	29MY1967	0.45652 )	( 1403	CA 2	10MY1967	0.62770 )	( 1404	MQ 2	10MY1967	0.31758 )
( 1405	ES 2	12MY1967	0.07740 )	( 1407	SM 2	14MY1967	0.37619 )	( 1349	CI 2	19AP1967	0.38437 )
( 1406	GB 2	13MY1967	0.01348 )	( 1419	BU 2	23MY1967	0.09154 )	( 1420	IH 2	23MY1967	0.30211 )
( 1421	CH 2	23MY1967	0.36433 )	( 1422	GA 2	23MY1967	0.12262 )	( 1423	WA 2	25MY1967	0.50101 )
( 1424	KN 2	25MY1967	0.50626 )	( 1430	MC 2	12JN1967	0.71552 )	(			

*Synedra ulna* var. *claviceps* Hust.

*Synedra ulna* var. *claviceps* Hustedt, Arch. Hydrobiol., Suppl. 15:157, pl. 10, fig. 36. 1938.

Valves linear with slightly expanded terminal portions and bluntly rounded ends. Striae coarse, usually 8-9 in 10 $\mu$ . Specimens from Lake Michigan 109-520 $\mu$  long.

Some authorities have speculated that specimens having this morphology are auxospore stages of *S. ulna*. The size range of specimens noted in this study seems to preclude this possibility.

687 SYULNAVL ICT NO OF STATIONS 90

( 3540	CH	11MY1879	0.00932 )	( 3541	CH	1FE1881	0.03913 )	( 46909	CH	MR1947	0.00455 )
( 46771	EV	11JN1937	0.00475 )	( 46760	EV	22SE1937	0.00492 )	( 46751	EV	30MR1938	0.01117 )
( 46756	EV	27AP1938	0.00840 )	( 46761	EV	27MY1938	0.01090 )	( 1240	D 6	10JN1964	0.00307 )
( 1250	C 6	10JL1964	0.00411 )	( 1254	D 2	15JL1964	0.00192 )	( 1259	F 2	6JL1964	0.02169 )
( 1260	F 3	6JL1964	0.02865 )	( 1266	D 3	18AU1964	0.00351 )	( 1277	D 4	18SE1964	0.00620 )
( 1279	E 1	16SE1964	0.00393 )	( 1280	E 2	16SE1964	0.00681 )	( 1285	F 1	15SE1964	0.02330 )
( 1286	F 2	15SE1964	0.01095 )	( 1287	F 3	15SE1964	0.01001 )	( 1298	E 1	120C1964	0.00269 )
( 1299	E 2	120C1964	0.00628 )	( 1300	E 3	130C1964	0.00716 )	( 1304	F 1	110C1964	0.00247 )
( 1306	F 3	110C1964	0.00277 )	( 1316	D 6	9NO1964	0.01133 )	( 1340	C 7	28MR1967	0.00073 )
( 1342	A 4	19AP1967	0.00361 )	( 1343	A 6	19AP1967	0.00139 )	( 1374	E 2	7MY1967	0.00598 )
( 1375	F 3	7MY1967	0.00241 )	( 1408	A 3	23MY1967	0.00894 )	( 1431	A 3	12JN1967	0.00772 )
( 1432	A 4	13JN1967	0.00255 )	( 1433	C 3	17JN1967	0.01292 )	( 1434	C 5	17JN1967	0.00299 )
( 1446	A 3	11JL1967	0.00245 )	( 1448	A 6	10JL1967	0.00354 )	( 1449	C 3	16JL1967	0.00382 )
( 1450	C 5	16JL1967	0.00381 )	( 1451	C 7	16JL1967	0.00394 )	( 1452	E 2	14JL1967	0.00426 )
( 1504	A 3	28AU1967	0.00247 )	( 1536	E 2	24SE1967	0.00273 )	( 1537	E 3	24SE1967	0.01725 )
( 1542	E 3	110C1967	0.01526 )	( 1543	E 5	100C1967	0.00718 )	( 1377	GS 1	9MY1967	0.01187 )
( 1379	GS 3	9MY1967	0.00619 )	( 1380	GS 4	9MY1967	0.02186 )	( 1381	GS 5	10MY1967	0.01431 )
( 1382	GS 6	10MY1967	0.02776 )	( 1383	GS 7	10MY1967	0.00535 )	( 1384	GS 8	10MY1967	0.00370 )
( 1385	GS 9	10MY1967	0.00942 )	( 1386	GS10	12MY1967	0.01436 )	( 1387	GS11	12MY1967	0.03169 )
( 1388	GS12	12MY1967	0.47059 )	( 1389	GS13	12MY1967	0.10572 )	( 1390	GS14	12MY1967	0.09982 )
( 1391	GS15	12MY1967	0.15323 )	( 1392	GS16	12MY1967	0.05239 )	( 1393	GS17	13MY1967	0.16163 )
( 1394	GS18	13MY1967	0.02408 )	( 1395	GS19	13MY1967	0.00352 )	( 1397	GS21	13MY1967	0.00065 )
( 1398	GS22	14MY1967	0.01518 )	( 1554	GS 1	30C1967	0.00712 )	( 1558	GS 5	40C1967	0.00396 )
( 1559	GS 7	40C1967	0.00699 )	( 1563	GS11	50C1967	0.00468 )	( 1564	GS12	50C1967	0.00165 )
( 1567	GS15	50C1967	0.02223 )	( 1569	GS17	50C1967	0.00743 )	( 1571	GS19	60C1967	0.00293 )
( 1573	GS21	60C1967	0.00112 )	( 1574	GS22	60C1967	0.00863 )	( 1575	GS28	60C1967	0.00645 )
( 1526	MO 1	20SE1967	0.00569 )	( 1552	SM 1	60C1967	0.01321 )	( 1550	MR 1	50C1967	0.02478 )
( 1428	MU 2	29MY1967	0.00603 )	( 1426	MS 2	29MY1967	0.05249 )	( 1427	LU 2	29MY1967	0.02421 )
( 1350	BH 2	19AP1967	0.01762 )	( 1399	PH 2	5MY1967	0.02040 )	( 1401	MO 2	6MY1967	0.01176 )
( 1402	TR 2	6MY1967	0.00541 )	( 1400	SB 2	6MY1967	0.01787 )	( 1419	BU 2	23MY1967	0.01831 )

*Synedra ulna* var. *constricta* Venkt.

*Synedra ulna* var. *constricta* Venkataraman, Proc. Indian Acad. Sci., 10 (B6):308, fig. 36. 1939.

Valves relatively broadly lanceolate, constricted in the center, with narrowly produced, rostrate ends. Specimens from Lake Michigan 75-180 $\mu$  long, 6-8 $\mu$  broad. Central area more or less elliptical, either reaching to the margins of the valve or bordered by shortened striae. Striae somewhat finer than in the nominate variety, 10-13 in 10 $\mu$ .

This entity is abundant and widely distributed in periphyton collections. Occasional specimens are noted in plankton collections from Lake Michigan. Its distinctive morphology may warrant its treatment as a separate species.

691 SYULNAV6 TOT NO OF STATIONS 7

( 46923 )	CH	22NO1946	0.00437 )	( 46758 )	EV	5JN1937	0.00357 )	( 1388 )	GS12	12MY1967	0.00603 )
( 1522 )	BH 1	18SE1967	0.00182 )	( 1531 )	GM 1	25SE1967	0.00845 )	( 1550 )	MR 1	50C1967	0.04956 )
( 1428 )	MU 2	29MY1967	0.00301 )	(							

*Synedra ulna* var. *danica* (Kütz.) V. H.

*Synedra danica* Kützling, Bacill., p. 66, pl. 14, fig. 13. 1844.

*Synedra ulna* var. *danica* (Kütz.) Van Heurck, Syn. Diat. Belgique, p. 151. 1885.

Valves elongate, linear-lanceolate with protracted, subcapitate ends. Specimens from Lake Michigan 180-350 $\mu$  long, 5-6 $\mu$  broad. Striae coarse, 9-11 in 10 $\mu$ . Central area usually present, rather small and rectangular in outline, sometimes containing faint ornamentation with the appearance of partially developed striae.

This entity is common in our collections from Lake Michigan, especially those taken from areas that have undergone enrichment. In some respects, it resembles *S. ulna* var. *chaseana* but may be distinguished from that taxon by its slightly broader valves, the presence of a central area and the shape of the ends of the valves which are smoothly rounded rather than more or less lanceolate as in *S. ulna* var. *chaseana*. In several of our collections from Lake Michigan populations of *S. ulna* var. *danica* occur together with unusual specimens with elongate expanded ends similar to the specimens Gemeinhardt (1926) cites as "regeneration forms."

686 SYULNAV6 TOT NO OF STATIONS 306

( 60973 )	CH	1876	0.04724 )	( 3540 )	CH	11MY1879	0.07455 )	( 3541 )	CH	1FE1881	0.36193 )
( 3507 )	CH	19FE1881	0.01132 )	( 46910 )	CH	0C1945	0.07100 )	( 46921 )	CH	23NO1945	0.10477 )
( 46908 )	CH	DE1945	0.05035 )	( 46517 )	CH	12JA1946	0.09898 )	( 46915 )	CH	20FE1946	0.33574 )
( 46914 )	CH	19AP1946	0.45167 )	( 46924 )	CH	10MY1946	0.15097 )	( 46923 )	CH	22NO1946	0.03497 )
( 46920 )	CH	20DE1946	0.06655 )	( 46505 )	CH	JA1947	0.03922 )	( 46909 )	CH	MR1947	0.11839 )
( 46912 )	CH	AP1947	0.13798 )	( 46916 )	CH	4MY1947	0.17643 )	( 46906 )	CH	MY1947	0.10354 )
( 46919 )	CH	5JN1947	0.02883 )	( 46507 )	CH	JL1947	0.54489 )	( 46913 )	CH	6AU1947	0.03138 )
( 46922 )	CH	21AU1947	0.03829 )	( 46758 )	EV	5JN1937	0.08559 )	( 46771 )	EV	11JN1937	0.14740 )
( 46743 )	EV	20JN1937	0.26548 )	( 46745 )	EV	3JL1937	0.35528 )	( 46770 )	EV	9JL1937	0.01193 )
( 46764 )	EV	17JL1937	0.10475 )	( 46757 )	EV	25JL1937	0.13480 )	( 46747 )	EV	1AU1937	0.33171 )
( 46763 )	EV	23AU1937	0.06088 )	( 46765 )	EV	30AU1937	0.02789 )	( 46769 )	EV	7SE1937	0.08684 )
( 46752 )	EV	15SE1937	0.04354 )	( 46760 )	EV	22SE1937	0.03447 )	( 46750 )	EV	24SE1937	0.22623 )
( 46744 )	EV	6OC1937	0.54623 )	( 46748 )	EV	13OC1937	0.44833 )	( 46767 )	EV	27OC1937	0.01547 )
( 46749 )	EV	12MR1938	0.48550 )	( 46768 )	EV	16MR1938	0.16169 )	( 46762 )	EV	18MR1938	0.06617 )
( 46751 )	EV	30MR1938	0.22331 )	( 46772 )	EV	18AP1938	0.06388 )	( 46756 )	EV	27AP1938	0.03694 )
( 46755 )	EV	19MY1938	0.06752 )	( 46761 )	EV	27MY1938	0.50692 )	( 46766 )	EV	14DE1938	0.04753 )
( 1223 )	B 3	18MY1964	0.03750 )	( 1224 )	B 4	18MY1964	0.05294 )	( 1225 )	C 6	15MY1964	0.42336 )
( 1226 )	C 7	16MY1964	0.33486 )	( 1227 )	C* 2	13MY1964	0.02632 )	( 1228 )	D 2	14MY1964	0.10315 )
( 1229 )	D 5	14MY1964	0.36159 )	( 1230 )	E 2	16MY1964	0.21633 )	( 1231 )	E 3	16MY1964	0.33265 )
( 1232 )	E 5	16MY1964	0.30436 )	( 1233 )	B 3	5JN2964	0.05239 )	( 1234 )	B 3	18JN1964	0.11527 )
( 1235 )	C 7	16JN1964	0.04236 )	( 1439 )	B 6	5JN1964	0.04995 )	( 1236 )	C* 1	8JN1964	0.11027 )
( 1237 )	C* 2	8JN1964	0.16455 )	( 1238 )	D 3	11JN1964	0.16600 )	( 1239 )	D 4	11JN1964	0.06150 )
( 1240 )	D 6	10JN1964	0.13499 )	( 1241 )	E 2	13JN1964	0.12568 )	( 1242 )	E 3	13JN1964	0.19033 )
( 1243 )	E 6	13JN1964	0.73081 )	( 1244 )	F 1	11JN1964	0.06908 )	( 1245 )	r 2	11JN1964	0.30427 )
( 1246 )	F 3	11JN1964	0.37053 )	( 1247 )	B 3	14JL1964	0.07257 )	( 1248 )	B 3	24JL1964	0.16355 )
( 1440 )	B 6	11JL1964	0.09950 )	( 1441 )	B 6	24JL1964	0.11674 )	( 1249 )	C 3	8JL1964	0.04617 )
( 1250 )	C 6	10JL1964	0.07400 )	( 1251 )	C 7	16JL1964	0.03766 )	( 1252 )	C* 1	16JL1964	0.02232 )
( 1253 )	C* 2	16JL1964	0.13465 )	( 1254 )	D 2	15JL1964	0.18004 )	( 1255 )	D 5	15JL1964	0.11550 )
( 1256 )	E 2	14JL1964	0.25647 )	( 1257 )	E 3	14JL1964	0.22491 )	( 1258 )	F 1	6JL1964	0.25486 )
( 1259 )	F 2	6JL1964	0.25719 )	( 1260 )	F 3	6JL1964	0.25739 )	( 1261 )	B 3	2AU1964	0.00981 )
( 1262 )	B 3	17AU1964	0.00630 )	( 1442 )	B 6	2AU1964	0.05800 )	( 1263 )	C 7	15AU1964	0.01201 )
( 1264 )	C* 1	10AU1964	0.03282 )	( 1265 )	C* 2	10AU1964	0.07824 )	( 1266 )	D 3	18AU1964	0.22450 )

( 1267	D 6	18AU1964	0.01513 )	( 1268	E 2	15AU1964	C.70030 )	( 1269	E 3	15AU1964	C.35356 )
( 1270	F 1	10AU1964	0.09258 )	( 1444	B 6	19SE1964	C.16066 )	( 1272	C* 1	10SE1964	C.01231 )
( 1273	C* 2	10SE1964	0.01613 )	( 1274	D 1	17SE1964	0.04223 )	( 1275	D 2	17SE1964	C.02580 )
( 1276	D 3	18SE1964	0.45820 )	( 1277	D 4	18SE1964	C.03718 )	( 1278	D 6	18SE1964	C.29594 )
( 1279	E 1	16SE1964	0.02356 )	( 1280	E 2	16SE1964	C.32678 )	( 1281	E 3	16SE1964	C.31786 )
( 1282	E 4	16SE1964	0.14404 )	( 1283	E 5	16SE1964	C.66201 )	( 1284	E 6	17SE1964	C.05719 )
( 1285	F 1	15SE1964	0.43096 )	( 1286	F 2	15SE1964	0.14229 )	( 1287	F 3	15SE1964	C.10508 )
( 1445	B 6	14OC1964	0.02283 )	( 1289	C 7	14OC1964	0.06596 )	( 1290	C* 1	16OC1964	C.00758 )
( 1291	C* 2	16OC1964	0.00978 )	( 1293	D 2	15OC1964	0.01887 )	( 1294	D 3	15OC1964	C.04615 )
( 1295	D 4	15OC1964	0.06541 )	( 1296	D 5	14OC1964	0.05115 )	( 1297	D 6	14OC1964	C.14089 )
( 1298	E 1	12OC1964	C.01077 )	( 1299	E 2	12OC1964	0.04398 )	( 1300	E 3	13OC1964	C.45463 )
( 1301	E 4	13OC1964	0.61821 )	( 1302	E 5	13OC1964	0.15386 )	( 1303	E 6	13OC1964	C.17911 )
( 1304	F 1	11OC1964	0.20498 )	( 1305	F 2	11OC1964	0.12766 )	( 1306	F 3	11OC1964	C.10810 )
( 1307	B 6	9NO1964	0.00722 )	( 1308	C 7	6NO1964	0.02129 )	( 1310	C* 2	10NO1964	C.00227 )
( 1312	D 2	8NO1964	0.00310 )	( 1313	D 3	9NO1964	C.02510 )	( 1314	D 4	9NO1964	0.04306 )
( 1315	D 5	9NO1964	0.02275 )	( 1316	D 6	9NO1964	C.01888 )	( 1317	E 1	6NO1964	C.00191 )
( 1318	E 2	7NO1964	0.02093 )	( 1319	E 3	7NO1964	0.02880 )	( 1320	E 4	7NO1964	C.00687 )
( 1321	E 5	7NO1964	0.04469 )	( 1322	E 6	7NO1964	C.12664 )	( 1323	F 1	6NO1964	0.02509 )
( 1324	F 2	6NO1964	0.03028 )	( 1325	F 3	6NO1964	0.12595 )	( 1336	C 3	27JA1967	C.02118 )
( 1337	C 3	2MR1967	0.51441 )	( 1338	C 3	28MR1967	0.33850 )	( 1339	C 5	28MR1967	C.12956 )
( 1340	C 7	28MR1967	0.50902 )	( 1341	A 3	19AP1967	0.60749 )	( 1342	A 4	19AP1967	C.25265 )
( 1342	A 6	19AP1967	0.48632 )	( 1344	C 3	25AP1967	0.63694 )	( 1345	C 5	25AP1967	C.45611 )
( 1346	C 7	21AP1967	0.93467 )	( 1347	E 2	23AP1967	0.34144 )	( 1348	E 5	23AP1967	C.31254 )
( 1368	A 3	4MY1967	1.42947 )	( 1369	A 4	4MY1967	1.82638 )	( 1370	A 6	3MY1967	1.39487 )
( 1371	C 3	4MY1967	2.26234 )	( 1372	C 5	5MY1967	0.99305 )	( 1373	C 7	5MY1967	C.59901 )
( 1374	E 2	7MY1967	1.39271 )	( 1375	E 3	7MY1967	0.92639 )	( 1408	A 3	23MY1967	2.67406 )
( 1409	A 4	23MY1967	1.14563 )	( 1410	A 6	24MY1967	3.15742 )	( 1411	C 3	31MY1967	2.15402 )
( 1412	C 5	31MY1967	0.98493 )	( 1413	C 7	25MY1967	1.21616 )	( 1414	E 2	28MY1967	C.94039 )
( 1415	E 3	28MY1967	1.36255 )	( 1416	E 5	28MY1967	0.19900 )	( 1431	A 3	12JN1967	1.56037 )
( 1432	A 4	13JN1967	2.14570 )	( 1433	C 3	17JN1967	3.31998 )	( 1434	C 5	17JN1967	1.67484 )
( 1435	C 7	13JN1967	1.02927 )	( 1436	E 2	15JN1967	2.36648 )	( 1437	E 3	15JN1967	C.47103 )
( 1438	E 5	14JN1967	0.43210 )	( 1446	A 3	11JL1967	0.57238 )	( 1447	A 4	11JL1967	5.99270 )
( 1448	A 6	10JL1967	C.36074 )	( 1449	C 3	16JL1967	1.60495 )	( 1450	C 5	16JL1967	1.42055 )
( 1451	C 7	16JL1967	1.28735 )	( 1452	E 2	14JL1967	0.49815 )	( 1453	E 3	15JL1967	C.64707 )
( 1454	E 5	15JL1967	1.02820 )	( 1504	A 3	28AU1967	0.31354 )	( 1505	A 4	28AU1967	0.01031 )
( 1506	A 6	25AU1967	0.05754 )	( 1508	C 3	25SE1967	0.21181 )	( 1509	C 5	25SE1967	C.54507 )
( 1510	C 7	29AU1967	0.04742 )	( 1511	E 2	15SE1967	0.53719 )	( 1512	E 3	15SE1967	1.00518 )
( 1513	E 5	31AU1967	0.24323 )	( 1532	A 3	18SE1967	0.02957 )	( 1533	A 4	19SE1967	C.01393 )
( 1534	A 6	19SE1967	0.00931 )	( 1535	C 7	20SE1967	0.00322 )	( 1536	E 2	24SE1967	C.38174 )
( 1537	E 3	24SE1967	1.40602 )	( 1538	E 5	23SE1967	0.35353 )	( 1540	C 5	40C1967	0.00496 )
( 1542	E 3	11OC1967	0.24410 )	( 1543	E 5	10OC1967	0.03591 )	( 1377	GS 1	9MY1967	2.95270 )
( 1378	GS 2	9MY1967	1.07649 )	( 1379	GS 3	9MY1967	C.51993 )	( 1380	GS 4	9MY1967	C.94165 )
( 1381	GS 5	10MY1967	0.46033 )	( 1382	GS 6	10MY1967	0.53568 )	( 1383	GS 7	10MY1967	C.41435 )
( 1384	GS 8	10MY1967	0.36972 )	( 1385	GS 9	10MY1967	1.31855 )	( 1386	GS10	12MY1967	C.25302 )
( 1387	GS11	12MY1967	1.01394 )	( 1388	GS12	12MY1967	2.81146 )	( 1389	GS13	12MY1967	C.99270 )
( 1390	GS14	12MY1967	2.05520 )	( 1391	GS15	12MY1967	2.46133 )	( 1392	GS16	12MY1967	1.07868 )
( 1393	GS17	13MY1967	1.40806 )	( 1394	GS18	13MY1967	0.52293 )	( 1395	GS19	13MY1967	C.20081 )
( 1396	GS20	13MY1967	0.01332 )	( 1397	GS21	13MY1967	0.00523 )	( 1398	GS22	14MY1967	1.41482 )
( 1554	GS 1	30C1967	0.26329 )	( 1555	GS 2	30C1967	0.12712 )	( 1556	GS 3	30C1967	C.09386 )
( 1557	GS 4	30C1967	0.17937 )	( 1558	GS 5	40C1967	0.06739 )	( 1559	GS 7	40C1967	C.54207 )
( 1560	GS 8	40C1967	0.19364 )	( 1561	GS 9	40C1967	0.14087 )	( 1562	GS10	50C1967	C.63157 )
( 1563	GS11	50C1967	0.51443 )	( 1564	GS12	50C1967	0.00988 )	( 1565	GS13	50C1967	C.02028 )
( 1566	GS14	50C1967	0.19263 )	( 1567	GS15	50C1967	0.81608 )	( 1568	GS16	50C1967	C.28860 )
( 1569	GS17	50C1967	0.29730 )	( 1570	GS18	50C1967	0.21817 )	( 1571	GS19	60C1967	C.01815 )
( 1573	GS21	60C1967	0.01680 )	( 1574	GS22	60C1967	0.37105 )	( 1575	GS28	60C1967	C.07354 )
( 1544	MU 1	20C1967	0.00238 )	( 1547	MS 1	20C1967	0.02395 )	( 1546	LU 1	20C1967	0.01000 )
( 1520	HO 1	18SE1967	0.05186 )	( 1521	SH 1	18SE1967	0.02308 )	( 1525	PW 1	20SE1967	0.02785 )
( 1526	MO 1	20SE1967	0.29584 )	( 1527	TR 1	20SE1967	0.23899 )	( 1528	SB 1	20SE1967	0.11551 )
( 1530	FR 1	24SE1967	0.25002 )	( 1531	GH 1	25SE1967	0.04227 )	( 1545	WL 1	20C1967	C.02027 )
( 1549	MQ 1	40C1967	0.19186 )	( 1551	ES 1	50C1967	0.03994 )	( 1552	SM 1	60C1967	0.07923 )
( 1550	MR 1	50C1967	0.16107 )	( 1553	SG 1	60C1967	0.02938 )	( 1428	MU 2	29MY1967	0.12655 )
( 1426	MS 2	29MY1967	0.83990 )	( 1351	MI 2	21AP1967	C.22964 )	( 1427	LU 2	29MY1967	1.41466 )
( 1417	HO 2	22MY1967	0.59818 )	( 1418	SH 2	22MY1967	1.83515 )	( 1350	BH 2	19AP1967	C.23568 )
( 1425	RA 2	25MY1967	0.50393 )	( 1401	MC 2	6MY1967	0.47037 )	( 1402	TR 2	6MY1967	C.24908 )
( 1400	SB 2	6MY1967	1.14367 )	( 1352	KW 2	21AP1967	0.32640 )	( 1353	FR 2	23AP1967	0.36920 )
( 1354	GH 2	25AP1967	0.05006 )	( 1429	WL 2	29MY1967	0.19110 )	( 1403	CA 2	10MY1967	C.68001 )
( 1404	MQ 2	10MY1967	2.17226 )	( 1405	ES 2	12MY1967	0.16125 )	( 1407	SM 2	14MY1967	0.25676 )
( 1349	CI 2	19AP1967	0.49932 )	( 1406	GB 2	13MY1967	0.00270 )	( 1419	BU 2	23MY1967	3.51520 )
( 1420	IH 2	23MY1967	2.73414 )	( 1421	CH 2	23MY1967	2.58501 )	( 1422	GA 2	23MY1967	1.96189 )
( 1423	WA 2	25MY1967	0.82216 )	( 1424	KN 2	25MY1967	0.75939 )	( 1430	MC 2	12JN1967	0.93758 )

*Synedra ulna* var. *longissima* (Wm. Smith) Brun

*Synedra longissima* Wm. Smith, Syn. British Diat., vol. 1, p. 72, pl. 12, fig. 95. 1853.

*Synedra ulna* var. *longissima* (Wm. Smith) Brun, Diat. Alpes Jura, p. 126, pl. 4, fig. 21. 1880.

Valves linear to linear-lanceolate with expanded, bluntly rounded ends. Frustules are often extremely elongate and many are more or less curved. Other features as in the nominate variety.

685 SYULNAV8 TOT NO OF STATIONS 3

( 1568	GS16	50C1967	0.00144 )	( 1403	CA 2	10MY1967	0.09154 )	( 1404	MQ 2	10MY1967	C.22866 )
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690 SYULNAV9 TOT NO OF STATIONS 3

( 1522	BH 1	18SE1967	0.48686 )	( 1531	GH 1	25SE1967	8.25021 )	( 1350	BH 2	19AP1967	C.02423 )
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*Synedra ulna* var. *oxyrhynchus* (Kütz.) V. H.

*Synedra oxyrhynchus* Kützting, Bacill., p. 66, pl. 14, fig. 8. 1844.

*Synedra ulna* var. *oxyrhynchus* (Kütz.) Van Heurck, Syn. Diat. Belgique, p. 151. 1885.

Valves linear with narrowly rostrate apices. The maximum length of this entity is less than 150 $\mu$  and the striae tend to be finer than in the nominate variety, usually about 14-15 in 10 $\mu$ .

693 SYULNAVX TCT NO OF STATIONS 11

( 46916 )	CH	4MY1947	0.00034 )	( 46506 )	CH	MY1947	0.00066 )	( 46919 )	CH	5JN1947	C.00303 )
( 46907 )	CH	JL1947	0.00049 )	( 46522 )	CH	21AU1947	0.00048 )	( 46743 )	EV	20JN1937	C.01285 )
( 1257 )	E 3	14JL1964	0.00239 )	( 1394 )	GS18	13MY1967	0.00344 )	( 1395 )	GS19	13MY1967	C.00235 )
( 1426 )	MS 2	29MY1967	0.02100 )	( 1427 )	LU 2	29MY1967	0.01211 )	(			

*Synedra ulna* var. *spathulifera* (Grun.) V. H.

*Synedra spathulifera* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 38, fig. 4. 1881.

*Synedra ulna* var. *spathulifera* (Grun.) Van Heurck, Syn. Diat. Belgique, p. 151. 1885.

Valves linear through most of their length, at the ends broadly expanded to a width greater than the center of the valve, then abruptly narrowed to produced, subcapitate ends. Other features of the morphology and ornamentation of the frustule are essentially similar to the nominate variety.

This entity is common in some periphyton collections from Lake Michigan. It is rarely taken in plankton collections and the specimens observed in our collections are undoubtedly derived from benthic habitats. As pointed out by other authors (Boyer 1927; Hustedt 1932) this entity is not related to the "regeneration forms" discussed above.

695 SYULNAVX TCT NO OF STATIONS 8

( 46767 )	EV	27CC1937	0.00387 )	( 1258 )	F 1	6JL1964	0.00236 )	( 1567 )	GS15	50C1967	C.00159 )
( 1522 )	BH 1	18SE1967	0.00912 )	( 1531 )	GH 1	25SE1967	0.10144 )	( 1553 )	SG 1	60C1967	C.01469 )
( 1417 )	HO 2	22MY1967	0.00374 )	( 1350 )	BH 2	19AP1967	0.02203 )	(			

### Species incertae sedis

*Synedra* sp. (aff. *S. hyperborea* var. *rostellata*)

674 SYHYPEVR TCT NO OF STATIONS 32

( 46908 )	CH	DE1945	0.01007 )	( 46515 )	CH	20FE1946	0.00569 )	( 46916 )	CH	4MY1947	C.00034 )
( 46922 )	CH	21AU1947	0.00048 )	( 46749 )	EV	12MR1938	0.01214 )	( 46761 )	EV	27MY1938	C.00818 )
( 1441 )	B 6	24JL1964	0.00220 )	( 1257 )	E 3	14JL1964	0.00239 )	( 1258 )	F 1	6JL1964	0.00708 )
( 1259 )	F 2	6JL1964	0.00310 )	( 1260 )	F 3	6JL1964	0.00382 )	( 1264 )	C* 1	10AU1964	0.00193 )
( 1291 )	C* 2	16OC1964	0.00245 )	( 1299 )	E 2	12OC1964	C.00943 )	( 1300 )	E 3	13OC1964	C.00358 )
( 1303 )	E 6	13OC1964	0.00560 )	( 1305 )	F 2	11OC1964	0.00345 )	( 1307 )	B 6	NO1964	C.00361 )
( 1311 )	D 1	8NO1964	0.00516 )	( 1315 )	D 5	9NO1964	C.01365 )	( 1319 )	E 3	7NC1964	C.00524 )
( 1320 )	E 4	7NO1964	0.00620 )	( 1321 )	E 5	7NO1964	0.00638 )	( 1347 )	E 2	23AP1967	C.00650 )
( 1348 )	E 5	23AP1967	C.00137 )	( 1370 )	A 6	3MY1967	0.00460 )	( 1376 )	E 5	6MY1967	C.00281 )
( 1432 )	A 4	13JN1967	0.00255 )	( 1448 )	A 6	10JL1967	C.00354 )	( 1539 )	C 3	40C1967	C.01006 )
( 1381 )	GS 5	10MY1967	0.00954 )	( 1382 )	GS 6	10MY1967	0.00278 )	(			

*Synedra* sp. #7.

704 SYSPCOG TCT NO OF STATIONS 7

( 46915 )	CH	5JN1947	C.00152 )	( 1236 )	C* 1	8JN1964	C.01050 )	( 1243 )	E 6	13JN1964	C.00205 )
( 1284 )	E 6	17SE1964	0.00318 )	( 1285 )	F 1	15SE1964	0.03494 )	( 1287 )	F 3	15SE1964	C.00500 )
( 1382 )	GS 6	10MY1967	0.00278 )	(							



*Synedra* sp. #12.

709 SYSPECOM TCT NO OF STATIONS 1  
( 1315 0 5 9ND1964 0.00455 ) (

*Synedra* sp. #13.

710 SYSPECOM TCT NO OF STATIONS 1  
( 1258 F 1 6JL1964 0.00472 ) (

*Synedra* "capitata var. fossilis" (not validly described).

667 SYCAPIVF TCT NO OF STATIONS 1  
( 1400 SB 2 6MY1967 0.00596 ) (

Genus *Tabellaria* Ehr.

Ehrenberg, Ber. Akad. Wiss. Berlin, 1840:217. 1840.

All members of the genus *Tabellaria* reported below occur in plankton collections from Lake Michigan in abundance. The populations observed are highly variable and specific determinations are often obtained with difficulty. It appears probable that some of these variable populations may contain more than one genetic entity, however we have found no way that they can be consistently separated on the basis of morphologic characteristics visible with the light microscope. Knudson (1952) has revised the genus, largely on the basis of the type of colony formation. In our experience this is the least stable of all morphologic characteristics. Any of the entities reported below will, in some instances, adopt any or all of the colony forms reported by Knudson.

*Tabellaria fenestrata* (Lyngb.) Kütz.

*Diatoma fenestratum* Lyngbye, Tent. Hydrophyt. Danicae, p. 180, pl. 61, fig. E(3). 1819.

*Tabellaria fenestrata* (Lyngb.) Kützling, Bacill., p. 127, pl. 18, fig. 2. 1844.

Cells in girdle view elongate-rectangular with rounded ends, united by gelatinous pads at the corners into zig-zag or, more rarely, linear or stellate colonies. Usually four conspicuous septae, lying in the valvar plane, are evident. Valves elongate, linear, slightly expanded at the middle and at the ends. Expanded areas subequal, middle only slightly broader than the ends. Valves of specimens from Lake Michigan 24-134 $\mu$  long, 4-8 $\mu$  broad at the middle. Striae fine, 18-22 in 10 $\mu$ , perpendicular to the midline throughout. Axial area narrow, linear, without any specially demarcated central area. At the ends of the valves there are pore fields composed of very fine and irregularly arranged puncta. A conspicuous slime pore is present just to one side of the axial area near the center of the valve. In some populations very fine marginal spines are present at the margins of the valve.

711 IAFENEST TCT NO OF STATIONS 320

(60973	CH	1876	9.84884	)	( 3540	CH	11MY1879	52.13623	)	( 3541	CH	1FE1881	53.07639	)
( 3507	CH	19FE1881	69.66266	)	(46910	CH	0C1945	12.17613	)	(46921	CH	23NO1945	36.46599	)
(46908	CH	DE1945	37.96576	)	(46517	CH	12JA1946	34.79790	)	(46915	CH	20FE1946	30.14282	)
(46914	CH	19AP1946	15.09508	)	(46524	CH	10MY1946	8.50570	)	(46923	CH	22NC1946	21.87785	)
(46920	CH	20DE1946	10.85439	)	(465C5	CH	JA1947	29.91420	)	(46909	CH	MR1947	42.02904	)
(46912	CH	AP1947	11.95815	)	(46516	CH	4MY1947	6.04276	)	(46906	CH	MY1947	2.97666	)
(46915	CH	5JN1947	3.79660	)	(46507	CH	JL1947	23.87903	)	(46913	CH	6AU1947	10.53237	)

146922	CH	21AU1947	33.39197	146758	EV	5JN1937	11.08337	146771	EV	11JN1937	3.46156
146743	EV	20JN1937	18.22385	146745	EV	3JL1937	28.67293	146770	EV	9JL1937	39.40839
146764	EV	17JL1937	18.72682	146757	EV	25JL1937	32.62241	146747	EV	1AU1937	16.91214
146763	EV	23AU1937	26.13635	146765	EV	30AU1937	44.66257	146769	EV	7SE1937	21.88449
146752	EV	15SE1937	19.50369	146760	EV	22SE1937	18.47456	146750	EV	24SE1937	18.73969
146744	EV	6OC1937	12.01717	146748	EV	13CC1937	1.19556	146767	EV	27OC1937	6.06553
146749	EV	12MR1938	7.13679	146768	EV	16MR1938	6.58533	146762	EV	18MR1938	8.02823
146751	EV	30MR1938	4.06431	146772	EV	18AP1938	3.57700	146756	EV	27AP1938	2.16263
146759	EV	19MY1938	4.15935	146761	EV	27MY1938	15.26218	146766	EV	14DE1938	11.53359
1223	B 3	18MY1964	6.54270	1224	B 4	18MY1964	7.68552	1225	C 6	15MY1964	22.77538
1226	C 7	16MY1964	31.96346	1227	C* 2	13MY1964	40.76105	1228	D 2	14MY1964	27.75344
1229	D 5	14MY1964	26.05147	1230	E 2	16MY1964	24.23766	1231	E 3	16MY1964	8.08874
1232	E 5	16MY1964	21.12769	1233	B 3	5JN1964	25.67216	1234	B 3	18JN1964	32.66982
1235	C 7	16JN1964	41.51721	1239	B 6	5JN1964	14.68531	1236	C* 1	8JN1964	26.71007
1237	C* 2	8JN1964	34.46764	1238	D 3	11JN1964	8.96000	1239	D 4	11JN1964	22.82564
1240	D 6	10JN1964	16.42863	1241	E 2	13JN1964	12.21279	1242	E 3	13JN1964	2.51776
1243	E 6	13JN1964	17.97794	1244	F 1	11JN1964	39.52721	1245	F 2	11JN1964	45.55575
1246	F 3	11JN1964	44.34351	1247	B 3	14JL1964	34.95966	1248	B 3	24JL1964	35.58760
1440	B 6	11JL1964	19.60422	1441	B 6	24JL1964	12.79764	1249	C 3	8JL1964	32.12927
1250	C 6	10JL1964	14.10072	1251	C 7	16JL1964	40.55855	1252	C* 1	16JL1964	38.85634
1253	C* 2	16JL1964	21.24794	1254	D 2	15JL1964	8.84888	1255	D 5	15JL1964	6.46784
1256	E 2	14JL1964	13.59273	1257	E 3	14JL1964	3.01471	1258	F 1	6JL1964	15.32651
1259	F 2	6JL1964	19.73846	1260	F 3	6JL1964	25.40251	1261	B 3	2AU1964	38.44455
1262	B 3	17AU1964	14.84670	1442	B 6	2AU1964	20.30023	1443	B 6	16AU1964	5.96323
1263	C 7	15AU1964	28.58286	1264	C* 1	10AU1964	36.62727	1265	C* 2	10AU1964	30.20142
1266	D 3	18AU1964	11.54062	1267	D 6	18AU1964	43.57976	1268	E 2	15AU1964	15.12747
1269	E 3	15AU1964	5.56378	1270	F 1	10AU1964	17.91695	1444	B 6	19SE1964	11.45836
1271	C 7	22SE1964	68.55127	1272	C* 1	10SE1964	28.73209	1273	C* 2	10SE1964	21.45276
1274	D 1	17SE1964	28.90254	1275	D 2	17SE1964	23.93393	1276	D 3	18SE1964	23.46892
1277	D 4	18SE1964	49.44850	1278	D 6	18SE1964	52.99973	1279	E 1	16SE1964	28.86087
1280	E 2	16SE1964	11.91368	1281	E 3	16SE1964	8.79017	1282	E 4	16SE1964	27.14680
1283	E 5	16SE1964	18.45041	1284	E 6	17SE1964	17.57060	1285	F 1	15SE1964	11.41459
1286	F 2	15SE1964	19.15498	1287	F 3	15SE1964	19.61569	1288	B 3	15OC1964	11.73320
1445	B 6	14OC1964	46.57533	1289	C 7	14OC1964	56.94560	1290	C* 1	16OC1964	27.85674
1291	C* 2	16OC1964	39.72408	1292	D 1	15OC1964	37.04532	1293	D 2	15OC1964	47.87283
1294	D 3	15OC1964	41.07195	1295	D 4	15OC1964	40.78963	1296	D 5	14OC1964	56.73367
1297	D 6	14OC1964	51.31183	1298	E 1	12OC1964	32.42136	1299	E 2	12OC1964	31.00847
1300	E 3	13OC1964	23.80525	1301	E 4	13OC1964	17.92810	1302	E 5	13OC1964	11.62037
1303	E 6	13OC1964	25.85916	1304	F 1	11OC1964	9.50805	1305	F 2	11OC1964	8.09095
1306	F 3	11OC1964	9.89523	1307	B 6	NO1964	30.30740	1308	C 7	6NO1964	50.67064
1309	C* 1	10NO1964	15.64510	1310	C* 2	10NO1964	20.00000	1311	D 1	8NO1964	24.74072
1312	D 2	8NO1964	25.42293	1313	D 3	9NO1964	38.24324	1314	D 4	9NO1964	32.15341
1315	D 5	9NO1964	48.40764	1316	D 6	9NO1964	24.06316	1317	E 1	6NO1964	24.66109
1318	F 2	7NO1964	26.50153	1319	E 3	7NO1964	21.26044	1320	E 4	7NO1964	17.55242
1321	E 5	7NO1964	16.75923	1322	E 6	7NO1964	11.43067	1323	F 1	6NO1964	9.17073
1324	F 2	6NO1964	12.55445	1325	F 3	6NO1964	27.15433	1326	C 3	27JA1967	76.56202
1337	C 3	2MR1967	8.43634	1338	C 3	28MR1967	8.97816	1339	C 5	28MR1967	21.82452
1340	C 7	28MR1967	4.47938	1341	A 3	19AP1967	15.51552	1342	A 4	19AP1967	20.21185
1343	A 6	19AP1967	1.84800	1344	C 3	25AP1967	14.93920	1345	C 5	25AP1967	12.55287
1346	C 7	21AP1967	8.13160	1347	E 2	23AP1967	8.99114	1348	E 5	23AP1967	14.77724
1368	A 3	4MY1967	17.81337	1369	A 4	4MY1967	9.91464	1370	A 6	3MY1967	14.82334
1371	C 3	4MY1967	14.86680	1372	C 5	5MY1967	12.41311	1373	C 7	5MY1967	9.16478
1374	E 2	7MY1967	10.04184	1375	E 3	7MY1967	14.99074	1376	E 5	6MY1967	34.63008
1408	A 3	23MY1967	35.95695	1409	A 4	23MY1967	25.20383	1410	A 6	24MY1967	29.99548
1411	C 3	31MY1967	19.24260	1412	C 5	31MY1967	10.31231	1413	C 7	25MY1967	7.29696
1414	E 2	28MY1967	14.10579	1415	E 3	28MY1967	11.01767	1416	E 5	28MY1967	21.12444
1431	A 3	12JN1967	34.42593	1432	A 4	13JN1967	10.01328	1433	C 3	17JN1967	22.56330
1434	C 5	17JN1967	7.74614	1435	C 7	13JN1967	11.49244	1436	E 2	15JN1967	7.05220
1437	E 3	15JN1967	4.33343	1438	E 5	14JN1967	7.87945	1446	A 3	11JL1967	27.22469
1447	A 4	11JL1967	10.64278	1448	A 6	10JL1967	62.63483	1449	C 3	16JL1967	6.15232
1450	C 5	16JL1967	8.93078	1451	C 7	16JL1967	26.59343	1452	E 2	14JL1967	16.24303
1453	E 3	15JL1967	1.50393	1454	E 5	15JL1967	36.82736	1504	A 3	28AU1967	46.48808
1505	A 4	28AU1967	31.38203	1506	A 6	29AU1967	61.51591	1508	C 3	2SE1967	42.24281
1509	C 5	2SE1967	10.24528	1510	C 7	29AU1967	48.46664	1511	E 2	1SE1967	12.67766
1512	E 3	1SE1967	4.35768	1513	E 5	31AU1967	13.47927	1532	A 3	18SE1967	36.10262
1533	A 4	19SE1967	32.49466	1534	A 6	19SE1967	31.92380	1535	C 7	20SE1967	63.95072
1536	E 2	24SE1967	25.57669	1537	E 3	24SE1967	11.77435	1538	E 5	23SE1967	37.89426
1539	C 3	4OC1967	28.52972	1540	C 5	4OC1967	39.95631	1541	E 2	11OC1967	28.68393
1543	E 5	10CC1967	48.77171	1577	GS 1	5MY1967	12.46784	1378	GS 2	9MY1967	25.14090
1379	GS 3	9MY1967	37.91161	1380	GS 4	5MY1967	39.31393	1381	GS 5	10MY1967	36.39746
1382	GS 6	10MY1967	20.98309	1383	GS 7	10MY1967	26.57185	1384	GS 8	10MY1967	18.24567
1385	GS 9	10MY1967	34.94148	1386	GS10	12MY1967	22.52226	1387	GS11	12MY1967	26.06146
1388	GS12	12MY1967	24.91704	1389	GS13	12MY1967	12.81489	1390	GS14	12MY1967	20.14091
1391	GS15	12MY1967	26.48087	1392	GS16	12MY1967	15.10155	1393	GS17	13MY1967	21.47710
1394	GS18	13MY1967	13.72691	1395	GS19	13MY1967	2.87714	1396	GS20	13MY1967	0.06289
1397	GS21	13MY1967	0.64097	1398	GS22	14MY1967	37.82979	1554	GS 1	3OC1967	15.92456
1555	GS 2	3OC1967	24.71751	1556	GS 3	3CC1967	40.15225	1557	GS 4	3OC1967	14.91031
1558	GS 5	4CC1967	11.93119	1559	GS 7	4OC1967	14.93320	1560	GS 8	4OC1967	18.18353
1561	GS 9	4OC1967	29.17180	1562	GS10	5OC1967	23.31375	1563	GS11	5OC1967	20.62386
1564	GS12	5OC1967	8.87155	1565	GS13	5OC1967	3.90427	1566	GS14	5OC1967	16.56577
1567	GS15	5OC1967	22.67242	1568	GS16	5OC1967	2.82824	1569	GS17	5OC1967	6.03511
1570	GS18	5OC1967	8.23003	1571	GS19	6OC1967	1.59811	1572	GS20	6OC1967	0.05047
1573	GS21	6OC1967	0.26206	1574	GS22	6OC1967	24.96692	1575	GS28	6OC1967	1.08376
1544	MU 1	2CC1967	0.15012	1547	MS 1	2OC1967	5.23752	1524	MI 1	20SE1967	38.87915
1546	LU 1	2CC1967	1.60056	1520	HO 1	18SE1967	15.61601	1521	SH 1	18SE1967	5.90815
1522	BH 1	18SE1967	0.00912	1523	RA 1	19SE1967	17.12177	1525	FW 1	20SE1967	47.68138
1526	MO 1	20SE1967	5.27963	1527	TR 1	20SE1967	1.91195	1528	SB 1	20SE1967	30.03175
1529	KW 1	20SE1967	6.52356	1530	FR 1	24SE1967	11.52115	1531	CH 1	25SE1967	1.75824
1545	WL 1	20C1967	2.91912	1548	CA 1	3OC1967	7.32731	1549	MC 1	4OC1967	21.70755
1551	ES 1	5OC1967	3.45075	1552	SM 1	6CC1967	0.66689	1550	MR 1	5OC1967	2.77537
1553	SG 1	6OC1967	0.41863	1428	MU 2	29MY1967	1.01238	1426	MS 2	29MY1967	10.75066
1351	MI 2	21AP1967	1.35022	1427	LU 2	29MY1967	17.62711	1417	HO 2	23MY1967	3.40960
1418	SH 2	22MY1967	35.83203	1350	BH 2	19AP1967	0.35242	1425	RA 2	25MY1967	17.11607
1399	PW 2	5MY1967	8.70511	1401	MO 2	6MY1967	5.26811	1402	TR 2	6MY1967	4.85163
1400	SB 2	6MY1967	6.67143	1352	KW 2	21AP1967	6.32194	1353	FR 2	23AP1967	46.24472
1354	GH 2	25AP1967	0.66281	1429	WL 2	29MY1967	5.26595	1403	CA 2	10MY1967	22.17862
1404	MQ 2	10MY1967	21.13820	1405							

*Tabellaria fenestrata* var. *geniculata* A. Cleve

*Tabellaria fenestrata* var. *geniculata* A. Cleve, Ofv. K. Svenska Vet.-Akad. Forhandl., 8:831, fig. 1-5. 1899.

Distinguished from the nominate variety by valves which are rather strongly bent in the apical axis. In most specimens the midportion of the valve is more strongly expanded on the side opposite the arc of the ends. This entity is highly variable in both frustule structure and colony formation. The valves are often somewhat constricted near the central and terminal expansions. Perhaps best treated as a separate species of subspecies (Skabitschewsky 1960).

112 TAEFENEVG ICT NC OF STATIONS 228

( 60973 )	CH	1876	0.02362 )	( 3540 )	CH	11MY1879	0.40069 )	( 3541 )	CH	1FE1881	0.44018 )
( 3507 )	CH	19FE1881	0.29432 )	( 46910 )	CH	0C1945	0.00218 )	( 46921 )	CH	23NO1945	0.00259 )
( 46917 )	CH	12JA1946	0.01636 )	( 46915 )	CH	20FE1946	0.05121 )	( 46914 )	CH	19AP1946	0.00214 )
( 46924 )	CH	10MY1946	0.00141 )	( 46923 )	CH	22NO1946	0.00219 )	( 46920 )	CH	20DE1946	0.00062 )
( 46905 )	CH	JA1947	0.00123 )	( 46909 )	CH	MR1947	0.01821 )	( 46912 )	CH	AP1947	0.01150 )
( 46916 )	CH	4MY1947	0.00068 )	( 46919 )	CH	5JN1947	0.00303 )	( 46907 )	CH	JL1947	0.04586 )
( 46922 )	CH	21AU1947	0.01551 )	( 46758 )	EV	5JN1937	0.00357 )	( 46771 )	EV	11JN1937	0.00238 )
( 46743 )	EV	20JN1937	0.01713 )	( 46745 )	EV	3JL1937	0.04180 )	( 46770 )	EV	9JL1937	0.03578 )
( 46764 )	EV	17JL1937	0.00806 )	( 46757 )	EV	25JL1937	0.05296 )	( 46747 )	EV	1AU1937	0.00743 )
( 46765 )	EV	30AU1937	0.02231 )	( 46767 )	EV	27OC1937	0.00387 )	( 46761 )	EV	27MY1938	0.00545 )
( 1223 )	B 3	18MY1964	0.00156 )	( 1224 )	B 4	18MY1964	0.00196 )	( 1225 )	C 6	15MY1964	0.00392 )
( 1226 )	C 7	16MY1964	0.01142 )	( 1227 )	C* 2	13MY1964	0.00548 )	( 1228 )	D 2	14MY1964	0.00973 )
( 1229 )	D 5	14MY1964	0.03806 )	( 1230 )	E 2	16MY1964	0.00889 )	( 1231 )	E 3	16MY1964	0.02201 )
( 1232 )	E 5	16MY1964	0.06261 )	( 1233 )	B 3	5JN2964	0.01667 )	( 1234 )	B 3	18JN1964	0.02530 )
( 1235 )	C 7	16JN1964	0.01130 )	( 1439 )	B 6	5JN1964	0.00799 )	( 1236 )	C* 1	8JN1964	0.00525 )
( 1237 )	C* 2	8JN1964	0.00258 )	( 1239 )	D 4	11JN1964	0.02321 )	( 1240 )	D 6	10JN1964	0.00153 )
( 1241 )	E 2	13JN1964	0.00444 )	( 1242 )	E 3	13JN1964	0.00150 )	( 1243 )	E 6	13JN1964	0.01879 )
( 1244 )	F 1	11JN1964	0.02193 )	( 1245 )	F 2	11JN1964	0.01037 )	( 1246 )	F 3	11JN1964	0.02988 )
( 1247 )	B 3	14JL1964	0.02134 )	( 1248 )	B 3	24JL1964	0.01379 )	( 1440 )	B 6	11JL1964	0.01843 )
( 1441 )	B 6	24JL1964	0.01762 )	( 1249 )	C 3	8JL1964	0.00815 )	( 1250 )	C 6	10JL1964	0.01644 )
( 1251 )	C 7	16JL1964	0.00579 )	( 1252 )	C* 1	16JL1964	0.08647 )	( 1253 )	C* 2	16JL1964	0.03880 )
( 1254 )	D 2	15JL1964	0.01341 )	( 1255 )	D 5	15JL1964	0.01797 )	( 1256 )	E 2	14JL1964	0.00550 )
( 1257 )	E 3	14JL1964	0.00718 )	( 1258 )	F 1	6JL1964	0.02360 )	( 1259 )	F 2	6JL1964	0.02789 )
( 1260 )	F 3	6JL1964	0.05348 )	( 1261 )	B 3	2AU1964	0.00589 )	( 1262 )	B 3	17AU1964	0.08190 )
( 1442 )	B 6	2AU1964	0.02388 )	( 1443 )	B 6	16AU1964	0.00593 )	( 1264 )	C* 1	10AU1964	0.01316 )
( 1265 )	C* 2	10AU1964	0.10730 )	( 1266 )	D 3	18AU1964	0.04911 )	( 1267 )	D 6	18AU1964	0.08214 )
( 1268 )	E 2	15AU1964	0.04650 )	( 1269 )	E 3	15AU1964	0.02193 )	( 1270 )	F 1	10AU1964	0.07352 )
( 1444 )	B 6	19SE1964	0.00909 )	( 1271 )	C 7	22SE1964	0.01306 )	( 1272 )	C* 1	10SE1964	0.02589 )
( 1273 )	C* 2	10SE1964	0.09678 )	( 1274 )	D 1	17SE1964	0.03612 )	( 1275 )	D 2	17SE1964	0.02415 )
( 1276 )	D 3	18SE1964	0.06705 )	( 1277 )	D 4	18SE1964	0.05577 )	( 1278 )	D 6	18SE1964	0.02267 )
( 1279 )	E 1	16SE1964	0.05497 )	( 1280 )	E 2	16SE1964	0.10212 )	( 1281 )	E 3	16SE1964	0.05494 )
( 1282 )	E 4	16SE1964	0.06648 )	( 1283 )	E 5	16SE1964	0.06743 )	( 1284 )	E 6	17SE1964	0.06355 )
( 1285 )	F 1	15SE1964	0.04837 )	( 1286 )	F 2	15SE1964	0.05259 )	( 1287 )	F 3	15SE1964	0.04552 )
( 1288 )	B 3	15OC1964	0.01306 )	( 1445 )	B 6	14OC1964	0.03588 )	( 1289 )	C 7	14OC1964	0.03078 )
( 1290 )	C* 1	16OC1964	0.06822 )	( 1291 )	C* 2	16OC1964	0.01712 )	( 1292 )	D 1	15OC1964	0.02609 )
( 1293 )	D 2	15OC1964	0.03302 )	( 1294 )	D 3	15OC1964	0.01319 )	( 1295 )	D 4	15OC1964	0.02378 )
( 1296 )	D 5	14OC1964	0.01967 )	( 1297 )	D 6	14OC1964	0.01333 )	( 1298 )	E 1	12OC1964	0.02154 )
( 1299 )	E 2	12OC1964	0.04084 )	( 1300 )	E 3	13OC1964	0.02148 )	( 1301 )	E 4	13OC1964	0.05741 )
( 1302 )	E 5	13OC1964	0.02429 )	( 1303 )	E 6	13OC1964	0.00560 )	( 1304 )	F 1	11OC1964	0.03704 )
( 1305 )	F 2	11OC1964	0.03105 )	( 1306 )	F 3	11OC1964	0.03603 )	( 1307 )	B 6	ND1964	0.21287 )
( 1308 )	C 7	6ND1964	0.04562 )	( 1309 )	C* 1	10ND1964	0.14150 )	( 1310 )	C* 2	10ND1964	0.11338 )
( 1311 )	D 1	8ND1964	0.05160 )	( 1312 )	D 2	8ND1964	0.09002 )	( 1313 )	D 3	9ND1964	0.02896 )
( 1314 )	D 4	9ND1964	0.04306 )	( 1315 )	D 5	9ND1964	0.03185 )	( 1316 )	D 6	9ND1964	0.01133 )
( 1317 )	E 1	6ND1964	0.08042 )	( 1318 )	E 2	7ND1964	0.05327 )	( 1319 )	E 3	7ND1964	0.01047 )
( 1320 )	E 4	7ND1964	0.03102 )	( 1321 )	E 5	7ND1964	0.02554 )	( 1322 )	E 6	7ND1964	0.01333 )
( 1323 )	F 1	6ND1964	0.05854 )	( 1324 )	F 2	6ND1964	0.04891 )	( 1325 )	F 3	6ND1964	0.03778 )
( 1337 )	C 3	2MR1967	0.00147 )	( 1338 )	C 3	28MR1967	0.00284 )	( 1340 )	C 7	28MR1967	0.00218 )
( 1342 )	A 4	19AP1967	0.00180 )	( 1343 )	A 6	19AP1967	0.00069 )	( 1345 )	C 5	25AP1967	0.00195 )
( 1346 )	C 7	21AP1967	0.00534 )	( 1347 )	E 2	23AP1967	0.00163 )	( 1348 )	E 5	23AP1967	0.00548 )
( 1368 )	A 3	4MY1967	0.00628 )	( 1371 )	C 3	4MY1967	0.00462 )	( 1375 )	E 3	7MY1967	0.00241 )
( 1376 )	E 5	6MY1967	0.01687 )	( 1409 )	A 4	23MY1967	0.00298 )	( 1410 )	A 6	24MY1967	0.01128 )
( 1411 )	C 3	31MY1967	0.00410 )	( 1414 )	E 2	28MY1967	0.00336 )	( 1415 )	E 3	28MY1967	0.00225 )
( 1416 )	E 5	28MY1967	0.00219 )	( 1438 )	E 5	14JN1967	0.00363 )	( 1446 )	A 3	11JL1967	0.00734 )
( 1448 )	A 6	10JE1967	0.00354 )	( 1449 )	C 3	16JL1967	0.14903 )	( 1450 )	C 5	16JL1967	0.00190 )
( 1451 )	C 7	16JL1967	0.00394 )	( 1452 )	E 2	14JL1967	0.00213 )	( 1453 )	E 3	15JL1967	0.00253 )
( 1454 )	E 5	15JL1967	0.03601 )	( 1504 )	A 3	28AU1967	0.00741 )	( 1509 )	C 5	2SE1967	0.01514 )
( 1510 )	C 7	29AU1967	0.00632 )	( 1511 )	E 2	1SE1967	0.04298 )	( 1512 )	E 3	1SE1967	0.06675 )
( 1513 )	E 5	31AU1967	0.29898 )	( 1534 )	A 6	19SE1967	0.00931 )	( 1535 )	C 7	20SE1967	0.00322 )
( 1536 )	E 2	24SE1967	0.22632 )	( 1537 )	E 3	24SE1967	0.31916 )	( 1538 )	E 5	23SE1967	0.03867 )
( 1540 )	C 5	4OC1967	0.00496 )	( 1541 )	E 2	11OC1967	0.22883 )	( 1542 )	E 3	11OC1967	0.18308 )
( 1543 )	E 5	10OC1967	0.00718 )	( 1377 )	GS 1	9MY1967	0.00396 )	( 1378 )	GS 2	9MY1967	0.01262 )
( 1379 )	GS 3	9MY1967	0.04023 )	( 1380 )	GS 4	9MY1967	0.06558 )	( 1381 )	GS 5	10MY1967	0.07632 )
( 1382 )	GS 6	10MY1967	0.06661 )	( 1383 )	GS 7	10MY1967	0.07218 )	( 1384 )	GS 8	10MY1967	0.01294 )
( 1385 )	GS 9	10MY1967	0.03296 )	( 1386 )	GS 10	12MY1967	0.02585 )	( 1387 )	GS 11	12MY1967	0.04357 )
( 1388 )	GS 12	12MY1967	0.03017 )	( 1389 )	GS 13	12MY1967	0.01289 )	( 1390 )	GS 14	12MY1967	0.00587 )
( 1391 )	GS 15	12MY1967	0.00958 )	( 1393 )	GS 17	13MY1967	0.00274 )	( 1398 )	GS 22	14MY1967	0.01214 )
( 1554 )	GS 1	3OC1967	0.26329 )	( 1555 )	GS 2	3OC1967	0.61794 )	( 1556 )	GS 3	3OC1967	0.01043 )
( 1557 )	GS 4	3OC1967	0.02990 )	( 1558 )	GS 5	4OC1967	0.03567 )	( 1559 )	GS 7	4OC1967	0.16087 )
( 1560 )	GS 8	4OC1967	0.11335 )	( 1561 )	GS 9	4OC1967	0.10565 )	( 1562 )	GS 10	5OC1967	0.01272 )
( 1563 )	GS 11	5OC1967	0.01637 )	( 1564 )	GS 12	5OC1967	0.00165 )	( 1567 )	GS 15	5OC1967	0.02382 )
( 1568 )	GS 16	5OC1967	0.00144 )	( 1569 )	GS 17	5OC1967	0.00297 )	( 1570 )	GS 18	5OC1967	0.01983 )
( 1571 )	GS 19	6CC1967	0.00059 )	( 1574 )	GS 22	6OC1967	0.03164 )	( 1547 )	MS 1	2OC1967	0.03992 )
( 1546 )	LU 1	2OC1967	0.01000 )	( 1526 )	MO 1	20SE1967	0.00569 )	( 1528 )	SB 1	20SE1967	0.01444 )
( 1530 )	FR 1	24SE1967	0.24002 )	( 1545 )	WL 1	2OC1967	0.00676 )	( 1549 )	MC 1	4CC1967	0.04111 )
( 1427 )	LU 2	25MY1967	0.01211 )	( 1352 )	KW 2	21AP1967	0.00859 )	( 1404 )	MQ 2	10MY1967	0.12703 )
( 1405 )	ES 2	12MY1967	0.00645 )	( 1421 )	CH 2	23MY1967	0.01735 )	( 1422 )	GA 2	23MY1967	0.00511 )

*Tabellaria fenestrata* var. *intermedia* Grun.

*Tabellaria fenestrata* var. *intermedia* Grunow in: Van Heurck, Syn. Diat. Belgique, pl. 52, fig. 6-8. 1881.

Distinguished from the nominate variety by its shorter valves which are usually much wider in girdle view and which usually contain more than 4 septae. Maximum length of observed specimens less than 100 $\mu$ . Perhaps best treated as a separate species.

713 TAFENEVI TCT NO CF STATIONS 29

( 3540	CH	11MY1879	0.07455 )	( 3541	CH	1FE1881	0.03913 )	( 46912	CH	AP1547	C.11150 )
( 46919	CH	5JN1947	0.00303 )	( 1449	C 3	16JL1567	0.03439 )	( 1454	E 5	15JL1967	C.00200 )
( 1511	E 2	1SE1967	0.00614 )	( 1513	E 5	31AU1967	C.02027 )	( 1537	E 3	24SE1967	C.00863 )
( 1541	E 2	11OC1967	C.00532 )	( 1542	E 3	11OC1967	C.01017 )	( 1380	GS 4	9MY1967	C.00336 )
( 1381	GS 5	10MY1967	0.00239 )	( 1382	GS 6	10MY1967	0.00278 )	( 1386	GS10	12MY1967	C.00575 )
( 1388	GS12	12MY1967	0.01207 )	( 1389	GS13	12MY1967	C.00516 )	( 1393	GS17	13MY1967	C.00274 )
( 1554	GS 1	30C1967	0.00356 )	( 1555	GS 2	30C1967	0.01412 )	( 1556	GS 3	30C1967	C.00521 )
( 1557	GS 4	30C1967	0.00374 )	( 1558	GS 5	40C1967	C.00793 )	( 1559	GS 7	40C1967	C.01049 )
( 1560	GS 8	40C1967	0.00945 )	( 1574	GS22	60C1967	0.00288 )	( 1547	PS 1	20C1967	C.00798 )
( 1548	CA 1	30C1967	C.01272 )	( 1245	CI 2	19AP1967	C.00359 )	(			

*Tabellaria flocculosa* (Roth) Kütz.

*Conferva flocculosa* Roth, Catalecta Bot., Fasc. 1, p. 192, pl. 4, fig. 4; pl. 5, fig. 6. 1797.

*Tabellaria flocculosa* (Roth) Kützling, Bacill., p. 127, pl. 17, fig. 21. 1844.

Cells in girdle view short, rectangular with rounded ends, united by gelatinous pads at the corners into zig-zag colonies. Usually more than 8 conspicuous septae, lying in the valvar plane, are evident in each cell. Valves linear, strongly expanded at the middle and less expanded at the ends. Valves often slightly asymmetric to the transverse axis, being wider at one side of the central expansion than at the other. Valves of specimens from Lake Michigan 15-65 $\mu$  long, 7-12 $\mu$  broad at the widest extremity. Striae fine, perpendicular to the midline throughout, 18-20 in 10 $\mu$ . Axial area narrow, linear, in some instances lanceolately widened at the middle of the valve. At the ends of the valves there are pore fields composed of very fine, irregularly arranged puncta. A conspicuous slime pore is present, usually lying to one side of the axial area at about the level of the beginning of the central expansion. In asymmetric valves the slime pore is usually toward the broader end of the valve. In some populations fine marginal spines are present at the ends of the valves.

714 TAFLECCU TCT NO CF STATIONS 318

( 60973	CH	1876	1.62966 )	( 3540	CH	11MY1879	17.06192 )	( 3541	CH	1FE1881	14.47716 )
( 3507	CH	19FE1881	7.99185 )	( 46510	CH	0C1945	C.78101 )	( 46921	CH	23NO1945	1.87028 )
( 46908	CH	DE1945	5.23666 )	( 46517	CH	12JA1946	3.15362 )	( 46915	CH	20FE1946	4.62642 )
( 46914	CH	19AP1946	3.50442 )	( 46524	CH	10MY1946	2.24688 )	( 46923	CH	22NO1946	4.83018 )
( 46920	CH	20DE1946	2.12282 )	( 46505	CH	JA1947	8.16644 )	( 46909	CH	MR1947	8.87938 )
( 46912	CH	AP1547	2.98954 )	( 46516	CH	4MY1547	1.10269 )	( 46906	CH	MY1547	C.56082 )
( 46919	CH	5JN1947	0.78906 )	( 46507	CH	JL1947	4.87196 )	( 46913	CH	6AU1947	C.05230 )
( 46922	CH	21AU1947	3.43370 )	( 46758	EV	5JN1937	3.19521 )	( 46771	EV	11JN1937	2.26332 )
( 46743	EV	20JN1937	5.27533 )	( 46745	EV	3JL1937	12.87356 )	( 46770	EV	9JL1937	18.53529 )
( 46764	EV	17JL1937	11.05560 )	( 46757	EV	25JL1937	7.00977 )	( 46747	EV	1AU1937	2.77248 )
( 46763	EV	23AU1937	4.54545 )	( 46765	EV	30AU1937	12.18070 )	( 46769	EV	7SE1937	10.94225 )
( 46752	EV	15SE1937	4.48411 )	( 46760	EV	22SE1937	4.27397 )	( 46750	EV	24SE1937	5.23787 )
( 46744	EV	6CC1937	2.73117 )	( 46748	EV	13OC1937	0.44833 )	( 46767	EV	27OC1937	2.92445 )
( 46745	EV	12MR1938	4.41801 )	( 46768	EV	16MR1938	1.96972 )	( 46762	EV	18MR1938	2.24967 )
( 46751	EV	30MR1938	2.07682 )	( 46772	EV	18AP1938	3.37828 )	( 46756	EV	27AP1938	C.85326 )
( 46759	EV	19MY1938	1.98514 )	( 46761	EV	27MY1938	3.96817 )	( 46766	EV	14DE1938	6.65399 )
( 1223	B 3	18MY1964	13.01664 )	( 1224	B 4	18MY1964	4.39173 )	( 1225	C 6	15MY1964	3.56723 )
( 1226	C 7	16MY1964	6.12633 )	( 1227	C* 2	13MY1964	7.82981 )	( 1228	D 2	14MY1964	4.08727 )
( 1229	D 5	14MY1964	6.66089 )	( 1230	E 2	16MY1964	7.05290 )	( 1231	E 3	16MY1964	5.82135 )
( 1232	E 5	16MY1964	6.45240 )	( 1233	B 3	5JN2964	21.17119 )	( 1234	B 3	18JN1964	15.64129 )
( 1235	C 7	16JN1964	23.72412 )	( 1439	B 6	5JN1964	13.84615 )	( 1236	C* 1	8JN1964	23.85203 )
( 1237	C* 2	8JN1964	11.36891 )	( 1238	D 3	11JN1964	2.66000 )	( 1239	D 4	11JN1964	13.32173 )

( 1240	D 6	10JUN1964	12.34833 )	( 1241	E 2	13JUN1964	11.07431 )	( 1242	E 3	13JUN1964	1.78341 )
( 1243	E 6	13JUN1964	13.30076 )	( 1244	F 1	11JUN1964	17.49942 )	( 1245	F 2	11JUN1964	22.26678 )
( 1246	F 3	11JUN1964	19.24341 )	( 1247	B 3	14JUL1964	13.44602 )	( 1248	B 3	24JUL1964	12.00047 )
( 1440	B 6	11JUL1964	14.44522 )	( 1441	B 6	24JUL1964	9.55968 )	( 1249	C 3	8JUL1964	14.25855 )
( 1250	C 6	10JUL1964	14.10072 )	( 1251	C 7	16JUL1964	36.29990 )	( 1252	C* 1	16JUL1964	23.43095 )
( 1253	C* 2	16JUL1964	14.05879 )	( 1254	D 2	15JUL1964	4.82666 )	( 1255	D 5	15JUL1964	2.87460 )
( 1256	E 2	14JUL1964	4.23170 )	( 1257	E 3	14JUL1964	2.17729 )	( 1258	F 1	6JUL1964	12.22361 )
( 1259	F 2	6JUL1964	13.23128 )	( 1260	F 3	6JUL1964	12.83496 )	( 1261	B 3	24JUL1964	11.67674 )
( 1262	B 3	17AUL1964	5.73288 )	( 1442	B 6	24AUL1964	19.10609 )	( 1443	B 6	16AUL1964	5.25837 )
( 1263	C 7	15AUL1964	8.68695 )	( 1264	C* 1	10AUL1964	20.94917 )	( 1265	C* 2	10AUL1964	10.79740 )
( 1266	D 3	18AUL1964	3.19209 )	( 1267	C 6	18AUL1964	16.49373 )	( 1268	E 2	15AUL1964	4.55569 )
( 1269	E 3	15AUL1964	0.64134 )	( 1270	F 1	10AUL1964	11.24574 )	( 1444	B 6	19SE1964	2.54630 )
( 1271	C 7	22SE1964	20.56538 )	( 1272	C* 1	10SE1964	11.49284 )	( 1273	C* 2	10SE1964	8.28001 )
( 1274	D 1	17SE1964	10.51002 )	( 1275	D 2	17SE1964	9.48326 )	( 1276	D 3	18SE1964	9.38757 )
( 1277	D 4	18SE1964	15.61532 )	( 1278	D 6	18SE1964	25.28920 )	( 1279	E 1	16SE1964	14.84274 )
( 1280	E 2	16SE1964	8.57785 )	( 1281	E 3	16SE1964	3.57101 )	( 1282	E 4	16SE1964	10.68310 )
( 1283	E 5	16SE1964	7.72343 )	( 1284	E 6	17SE1964	9.11893 )	( 1285	F 1	15SE1964	7.74562 )
( 1286	F 2	15SE1964	8.42820 )	( 1287	F 3	15SE1964	8.75700 )	( 1288	B 3	15OC1964	7.46659 )
( 1445	B 6	14OC1964	18.94977 )	( 1289	C 7	14OC1964	20.00790 )	( 1290	C* 1	16OC1964	6.63256 )
( 1291	C* 2	16OC1964	11.98571 )	( 1292	D 1	15OC1964	13.56589 )	( 1293	D 2	15OC1964	15.84756 )
( 1294	D 3	15OC1964	15.22893 )	( 1295	D 4	15OC1964	18.72992 )	( 1296	D 5	14OC1964	19.00302 )
( 1297	D 6	14OC1964	21.59094 )	( 1298	E 1	12CC1964	17.34166 )	( 1299	E 2	12OC1964	12.75526 )
( 1300	E 3	13OC1964	9.27152 )	( 1301	E 4	13OC1964	6.80032 )	( 1302	E 5	13OC1964	6.51875 )
( 1303	E 6	13OC1964	21.94112 )	( 1304	F 1	11OC1964	4.49471 )	( 1305	F 2	11OC1964	4.46814 )
( 1306	F 3	11OC1964	2.71634 )	( 1307	B 6	NO1964	18.43700 )	( 1308	C 7	6NO1964	22.14178 )
( 1309	C* 1	10NO1964	6.07795 )	( 1310	C* 2	10NO1964	6.98413 )	( 1311	D 1	8NO1964	6.68180 )
( 1312	D 2	8NO1964	8.47431 )	( 1313	D 3	9NO1964	10.54054 )	( 1314	D 4	9NO1964	14.67112 )
( 1315	D 5	9NO1964	13.05732 )	( 1316	D 6	9NO1964	20.09669 )	( 1317	E 1	6NO1964	8.64166 )
( 1318	E 2	7NO1964	9.45532 )	( 1319	E 3	7NO1964	5.86495 )	( 1320	E 4	7NO1964	7.52844 )
( 1321	E 5	7NO1964	6.48024 )	( 1322	E 6	7NO1964	6.53181 )	( 1323	F 1	6NC1964	7.90244 )
( 1324	F 2	6NO1964	8.96746 )	( 1325	F 3	6NO1964	17.28003 )	( 1336	C 3	27JUL1967	7.27861 )
( 1337	C 3	28MR1967	4.42393 )	( 1338	C 3	28MR1967	4.16512 )	( 1339	C 5	28MR1967	8.29332 )
( 1340	C 7	28MR1967	1.98518 )	( 1341	A 3	19AP1967	6.15081 )	( 1342	A 4	19AP1967	5.81091 )
( 1343	A 6	19AP1967	1.26442 )	( 1344	C 3	25AP1967	3.24262 )	( 1345	C 5	25AP1967	2.18311 )
( 1346	C 7	21AP1967	1.68240 )	( 1348	E 5	23AP1967	4.22207 )	( 1368	A 3	4MY1967	6.37763 )
( 1369	A 4	4MY1967	1.30456 )	( 1370	A 6	3MY1967	5.96156 )	( 1371	C 3	4MY1967	3.39351 )
( 1372	C 5	5MY1967	3.22741 )	( 1373	C 7	5MY1967	C.49917 )	( 1374	E 2	7MY1967	4.81172 )
( 1375	E 3	7MY1967	5.05306 )	( 1376	E 5	6MY1967	10.23162 )	( 1408	A 3	23MY1967	13.77275 )
( 1409	A 4	23MY1967	5.41570 )	( 1410	A 6	24MY1967	5.92016 )	( 1411	C 3	31MY1967	7.75448 )
( 1412	C 5	31MY1967	2.94638 )	( 1413	C 7	25MY1967	5.08576 )	( 1414	E 2	28MY1967	4.93703 )
( 1415	E 3	28MY1967	3.93488 )	( 1416	E 5	28MY1967	4.13304 )	( 1431	A 3	12JUN1967	11.53535 )
( 1432	A 4	13JUN1967	3.39736 )	( 1433	C 3	17JUN1967	17.63338 )	( 1434	C 5	17JUN1967	3.97775 )
( 1435	C 7	13JUN1967	5.74622 )	( 1436	E 2	15JUN1967	3.03951 )	( 1446	A 3	11JUL1967	13.52674 )
( 1447	A 4	11JUL1967	3.60217 )	( 1448	A 6	10JUL1967	11.88329 )	( 1449	C 3	16JUL1967	1.33746 )
( 1450	C 5	16JUL1967	2.39931 )	( 1451	C 7	16JUL1967	9.09413 )	( 1452	E 2	14JUL1967	5.81173 )
( 1453	E 3	15JUL1967	0.25782 )	( 1454	E 5	15JUL1967	11.76235 )	( 1504	A 3	28AUL1967	10.54191 )
( 1505	A 4	28AUL1967	4.32856 )	( 1506	A 6	29AUL1967	9.52032 )	( 1508	C 3	25E1967	10.35089 )
( 1509	C 5	25E1967	3.05844 )	( 1510	C 7	29AUL1967	8.18843 )	( 1511	E 2	15E1967	4.08263 )
( 1512	E 3	15E1967	0.46725 )	( 1513	E 5	31AUL1967	7.09435 )	( 1532	A 3	18SE1967	6.20873 )
( 1533	A 4	19SE1967	7.14882 )	( 1534	A 6	19SE1967	8.90392 )	( 1535	C 7	20SE1967	12.84321 )
( 1536	E 2	24SE1967	6.48961 )	( 1537	E 3	24SE1967	C.60381 )	( 1538	E 5	23SE1967	6.96017 )
( 1539	C 3	4CC1967	6.69216 )	( 1540	C 5	4CC1967	9.72849 )	( 1541	E 2	11OC1967	6.70534 )
( 1542	E 3	11OC1967	0.37632 )	( 1543	E 5	10CC1967	9.55322 )	( 1377	GS 1	9MY1967	6.05539 )
( 1378	GS 2	9MY1967	12.95152 )	( 1379	GS 3	9MY1967	15.93066 )	( 1380	GS 4	9MY1967	15.77266 )
( 1381	GS 5	10MY1967	15.52736 )	( 1382	GS 6	10MY1967	6.99436 )	( 1383	GS 7	10MY1967	11.22754 )
( 1384	GS 8	10MY1967	6.98771 )	( 1385	GS 9	10MY1967	10.71319 )	( 1386	GS10	12MY1967	5.22838 )
( 1387	GS11	12MY1967	4.99049 )	( 1388	GS12	12MY1967	6.75716 )	( 1389	GS13	12MY1967	3.60983 )
( 1390	GS14	12MY1967	4.52143 )	( 1391	GS15	12MY1967	6.03362 )	( 1392	GS16	12MY1967	3.23605 )
( 1393	GS17	13MY1967	4.21872 )	( 1394	GS18	13MY1967	1.68576 )	( 1395	GS19	13MY1967	C.45212 )
( 1356	GS20	13MY1967	0.00666 )	( 1357	GS21	13MY1967	0.02224 )	( 1398	GS22	14MY1967	7.65097 )
( 1554	GS 1	30C1967	8.71700 )	( 1555	GS 2	30C1967	8.65113 )	( 1556	GS 3	30C1967	14.45481 )
( 1557	GS 4	30C1967	3.40060 )	( 1558	GS 5	40C1967	6.65927 )	( 1559	GS 7	40C1967	6.60978 )
( 1560	GS 8	40C1967	12.56317 )	( 1561	GS 9	40C1967	18.48917 )	( 1562	GS10	50C1967	8.63473 )
( 1563	GS11	50C1967	9.16616 )	( 1564	GS12	50C1967	2.30430 )	( 1565	GS13	50C1967	0.70987 )
( 1566	GS14	50C1967	5.13667 )	( 1567	GS15	50C1967	7.11292 )	( 1568	GS16	50C1967	C.17171 )
( 1569	GS17	50C1967	1.24864 )	( 1570	GS18	50C1967	1.24950 )	( 1571	GS19	60C1967	0.00761 )
( 1572	GS20	60C1967	0.01172 )	( 1573	GS21	60C1967	0.01568 )	( 1574	GS22	60C1967	7.65115 )
( 1575	GS28	60C1967	0.16385 )	( 1544	MU 1	2CC1967	0.00953 )	( 1547	MS 1	20C1967	2.29940 )
( 1524	MI 1	20SE1967	10.85814 )	( 1546	LU 1	2CC1967	C.21508 )	( 1520	HO 1	18SE1967	4.67726 )
( 1521	SH 1	18SE1967	1.75398 )	( 1522	BH 1	18SE1967	0.00182 )	( 1523	RA 1	19SE1967	6.49446 )
( 1525	PW 1	20SE1967	14.52828 )	( 1526	MO 1	20SE1967	3.18598 )	( 1527	TR 1	20SE1967	C.58491 )
( 1528	SB 1	20SE1967	9.70257 )	( 1529	KW 1	20SE1967	2.87804 )	( 1530	FR 1	24SE1967	4.16042 )
( 1531	GH 1	25SE1967	C.18597 )	( 1545	WL 1	2CC1967	C.32435 )	( 1548	CA 1	30C1967	2.25658 )
( 1549	MO 1	40C1967	10.52487 )	( 1551	ES 1	50C1967	0.87068 )	( 1552	SM 1	60C1967	C.37636 )
( 1550	MR 1	50C1967	0.39648 )	( 1553	SG 1	60C1967	C.23502 )	( 1428	MU 2	29MY1967	0.62671 )
( 1426	MS 2	29MY1967	3.19160 )	( 1351	MI 2	21AP1967	0.79441 )	( 1427	LU 2	29MY1967	8.71671 )
( 1417	HO 2	22MY1967	2.39270 )	( 1418	SH 2	22MY1967	17.16951 )	( 1350	EH 2	19AP1967	C.79229 )
( 1425	RA 2	25MY1967	9.76041 )	( 1399	PW 2	5MY1967	4.67900 )	( 1401	MO 2	6MY1967	2.06961 )
( 1402	TR 2	6MY1967	1.99264 )	( 1400	SB 2	6MY1967	3.52633 )	( 1352	KW 2	21AP1967	2.06150 )
( 1353	FR 2	23AP1967	11.64557 )	( 1354	GH 2	25AP1967	C.06041 )	( 1429	WL 2	29MY1967	2.71791 )
( 1403	CA 2	10MY1967	11.92624 )	( 1404	MC 2	10MY1967	11.58537 )	( 1405	ES 2	12MY1967	3.92157 )
( 1407	SM 2	14MY1967	3.34388 )	( 1349	CI 2	19AP1967	1.26446 )	( 1419	BU 2	23MY1967	12.88905 )
( 1420	IH 2	23MY1967	18.85196 )	( 1421	CH 2	23MY1967	13.60167 )	( 1422	CA 2	23MY1967	13.89669 )
( 1423	WA 2	25MY1967	8.90678 )	( 1424	KN 2	25MY1967	6.39488 )	( 1430	MC 2	12JUN1967	16.18553 )

Genus *Thalassiosira* Cleve  
Cleve, Bih. K. Svenska Vet.-Akad. Handl., 1(13):6. 1873.

Members of the genus *Thalassiosira* find their primary habitat in marine and brackish-water plankton communities. The species occurring in Lake Michigan are usually associated with areas receiving considerable chloride contamination.

*Thalassiosira fluviatilis* Hust.

*Thalassiosira fluviatilis* Hustedt, Ber. Deutsch. Bot. Ges., 43:565, figs. 1-4. 1926.

Cells short cylindric with either concave or convex valve faces. Specimens from Lake Michigan 12-27 $\mu$  in diameter. Ornamentation of the valve surface composed of fine areolae which are arranged in single, more or less sinuous, rows of varying lengths. A corona of short submarginal spines, about 14 in 10 $\mu$ , is present and in addition a single (very rarely 2 or 3) much larger spine arises just interior to the level of the smaller spines. Usually 2-5 more or less conspicuous slime pores occur around the center of the valve about one-fourth the distance from the center to the edge of the valve.

Previous records indicate that this species is a halophilous freshwater form of wide distribution. It is occasionally in samples from regions of Lake Michigan subjected to chloride contamination. In rare instances it occurs in considerable abundance.

715 THFLUVIA TCT NO OF STATIONS										4	
( 1544	MU 1	20C1967	0.00238 )	( 1522	BH 1	18SE1967	0.11123 )	( 1531	GH 1	25SE1967	0.02536 )
( 1350	BH 2	15AP1967	0.00220 )								

*Thalassiosira levanderi* Van Goor

*Thalassiosira levanderi* Van Goor, Rec. Trav. Bot. Néerlandis, 21:322, fig. 11. 1924.

Cells cylindrical with slightly convex valve surfaces, specimens from Lake Michigan 8-19 $\mu$  in diameter. Ornamentation of the valve surface composed of irregularly-arranged areolae, about 20-22 in 10 $\mu$  near the center of the valve, becoming finer near the margins. At the margins of the valve there is a corona of spines, about 10 in 10 $\mu$ . These spines appear to be of two varieties, larger, tubular spines rather evenly spaced with 3-4 smaller, apparently solid spines between. Two to three conspicuous slime pores occur near the center of the valve.

Only occasional specimens of this entity have been noted in collections from Lake Michigan.

Coll: 1197.

*Thalassiosira visurgis* Hust.

*Thalassiosira visurgis* Hustedt, Abh. Naturw. Ver. Bremen, 34(3):207, pl. 1, figs. 1-4. 1957.

Cells cylindric with slightly convex valve faces. Specimens from Lake Michigan 14-23 $\mu$  in diameter. Ornamentation of the valve surface composed of more or less radially-arranged areolae, about 16 in 10 $\mu$  near the center of the valve, becoming slightly finer near the margins. A submarginal corona of small spines, 14-15 in 10 $\mu$ , is present and in addition 2 (rarely 1-4) much larger spines arise just interior to the circlet of smaller spines. These spines are usually about 120° from one another. Usually a single slime pore is present near the geometric center of the valve.

The limited number of previous reports available indicates that this entity occurs in inland waters of relatively high dissolved solids content as well as in brackish water.

717 THSPECOA TGT NO OF STATICS 12

( 1317	E 1	6NQ1964	0.00191 )	( 1557	GS 4	30C1967	0.00747 )	( 1559	GS 7	40C1967	0.00350 )
( 1560	GS 8	40C1967	0.00472 )	( 1563	GS11	50C1967	0.00234 )	( 1575	GS28	60C1967	0.00129 )
( 1544	MU 1	20C1967	0.00238 )	( 1531	GH 1	25SE1967	0.20287 )	( 1545	WL 1	20C1967	0.00676 )
( 1548	CA 1	30C1967	0.01272 )	( 1401	MC 2	6MY1967	0.00588 )	( 1422	GA 2	23MY1967	0.00511 )

Genus *Tropidoneis* Cleve  
Cleve, Diatomist, 1:22. 1890.

Although most members of the genus *Tropidoneis* are restricted to marine or brackish-water habitats, the single representative that occurs in our collections is widely reported from strictly freshwater situations. It reaches its maximum abundance in benthic communities but apparently adopts planktonic existence with facility and is often taken in plankton collections.

*Tropidoneis lepidoptera* var. *proboscidea* Cleve

*Tropidoneis lepidoptera* var. *proboscidea* Cleve, K. Svenska Vet.-Akad. Handl., Ny Följd, 26(2):25. 1894.

718 TRLEPIVP TGT NO CF STATICS 5

(46750	EV	24SE1937	0.00471 )	(46762	EV	18MR1938	0.02206 )	( 1571	GS19	60C1967	0.00059 )
( 1553	SG 1	60C1967	0.00734 )	( 1421	CH 2	23MY1967	0.01735 )	(			

Species *incertae sedis*

*Tropidoneis* sp. #1.

719 TRSPECOA TGT NO CF STATICS 2

( 1240	D 6	10JN1964	0.00153 )	( 1268	E 2	15AU1964	0.00274 )	(			
73.202 SEC. CPU TIME											

## CONCLUSIONS

It is apparent from the areal and temporal distribution of dominant plankton diatoms in Lake Michigan that certain entities are associated with certain broadly defined conditions of water quality. Certain taxa, notably *Cyclotella comta*, *C. operculata*, *C. ocellata* and *Melosira distans*, are apparently relatively important constituents of only extremely oligotrophic floras and are rapidly replaced in disturbed portions of the lake. These entities, with the exception of *M. distans*, are still found in the offshore flora of Lake Michigan although they appear to be relatively less abundant than they previously were, particularly in the southern basin of the lake. Reduction in the relative abundance of these entities is among the first indications of disturbance of the ecosystem that appears in phytoplankton assemblages.

Several entities which are relatively more abundant in the plankton flora appear to be somewhat more tolerant of changing conditions but are rapidly reduced in abundance with extensive chemically measurable change. Notable examples of this tendency are found among some of the modern offshore plankton dominants such as *Tabellaria fenestrata*, *Melosira islandica*, *Rhizosolenia eriensis*, *Stephanodiscus transilvanicus*, *Synedra ulna* var. *chaseana*, *C. michiganiana* and *C. kuetzingiana*. Decline in relative abundance of these taxa is the first indication of serious disturbance of areas within the Lake Michigan ecosystem.

Other entities which are relatively abundant in undisturbed portions of the lake appear to be favored by slight increases in trophic level and flourish in moderately disturbed portions of the lake. They initially show an increase in relative abundance only to decline if pollution increases. Some notable examples of this tendency are *Asterionella formosa*, *Fragilaria crotonensis*, *Stephanodiscus alpinus*, *S. minutus*, *S. niagarae*, *S. hantzschii*, *Synedra delicatissima*, *S. ulna* var. *danica*, *S. ostenfeldii* and *S. filiformis*. Decline in the relative abundance of these species in the plankton flora is usually accompanied by obvious decline in water quality and disturbance in higher trophic levels of the ecosystem such as the fish and benthic invertebrate faunas.

A number of species which were formerly apparently able to thrive only in naturally eutrophic estuaries and inshore areas of the lake are favored by increasing pollution and are able to flourish in highly disturbed portions of the open lake. Some of the more abundant entities showing this pattern of distribution are *Melosira granulata* and its varieties, *Fragilaria capucina* and its varieties, *F. construens*, *F. intermedia* and *Stephanodiscus tenuis*. Within this group *Melosira granulata* appears to be less successful in the offshore flora than might be expected from its usual dominance in smaller eutrophic lakes, probably due to its temperature tolerance. Its varieties appear to favor even higher trophic levels and become most abundant in extremely disturbed environments. On the other hand, the varieties of *Fragilaria capucina* appear to be better



adapted to existence in the offshore flora than the nominate variety. The species in this group presently are dominant in highly disturbed areas such as the nearshore waters of the southern basin of Lake Michigan and Green Bay. Most of them are best adapted to the ecosystem of smaller lakes, and with further disturbance of the system they will likely be replaced by entities in the following category. The single exception to this is *Stephanodiscus tenuis* which is well adapted to existence in the Great Lakes and which has become dominant in the plankton floras of Lake Ontario and Lake Erie.

The final general group of dominant plankton species includes those taxa which were apparently not able to live in Lake Michigan in its original condition and which have been introduced following pollution. Included in this group are such species as *Asterionella bleakleyi*, *Diatoma tenue* var. *elongatum*, *Stephanodiscus binderanus*, *S. subtilis*, *Nitzschia dissipata* and finally the species of *Thalassiosira* and *Coscinodiscus* now present. Within this group *Diatoma tenue* var. *elongatum*, *Nitzschia dissipata*, *Stephanodiscus binderanus* and *S. subtilis* first appear in our samples from the late 1930's. Ahlstrom (1936) reported *Diatoma tenue* var. *elongatum* from samples taken in the early 1930's and it is possible that some of the populations he reported as *Stephanodiscus hantzschii* may belong to either *S. binderanus* or *S. subtilis*. *Nitzschia dissipata* is a very widely distributed organism and seems to become moderately abundant in eutrophic lakes in many localities. Perhaps the most interesting taxon in this group from the standpoint of direct effects on water quality is *S. binderanus*. From the time of its introduction, probably sometime in the early 1930's, it increased in abundance to the point that it caused serious problems with short filter runs at the Chicago filtration plant in the mid and late 1950's (Vaughn 1961). At the present time it is dominant in the spring flora at some stations in the extreme southern basin and in Green Bay. It also seems to be increasing at the offshore stations as a considerable increase was noted between comparable stations in 1964 and 1967. It should be pointed out that estimates of the increase in abundance in this particular nuisance organism are probably highly conservative because its peak abundance is associated with the development of the thermal bar (Stoermer 1968). The final series of taxa, members of the genera *Thalassiosira* and *Coscinodiscus*, which appear to have been introduced into Lake Michigan sometime after 1945, apparently represent the end members of the pollution sequence in the Great Lakes, so far as the plankton diatom flora is concerned. At the present time the distribution of these entities in Lake Michigan is quite restricted. *Coscinodiscus subsalsus* has become one of the dominant species in Lake Erie and can be expected to increase dramatically as pollution of the lake continues.

Consideration of distribution and relative abundance of the major components of the plankton flora leads one to the conclusion that Lake Michigan is probably at the present time about at the "break point" between rather moderate and transient algal nuisances, largely confined to the inshore waters, and drastic and most likely irreversible changes in the entire ecosystem. As pointed out above, all of the plankton diatoms associated with extreme water quality degradation in the Great Lakes

system are now present in Lake Michigan. While the end members of the sequence are now present in only negligible numbers, the apparently accelerating increase in *S. binderanus* is disturbing both from the standpoint of its direct effect on water quality and because of the effects on the total system its presence indicates. Based on our qualitative evaluation of floristic changes in Lake Michigan it appears that reversal of the present trends will depend largely upon actions taken within the next, at most, ten years. It should be emphasized here that the samples available to us tend to introduce a conservative bias to these considerations. The early samples are all from the area which was earliest and most severely affected. Many of our recent samples come from the areas of the lake furthest removed from, and least affected by man's activities. This, unfortunately, shows only the worst conditions in Lake Michigan at the early dates and a spectrum including the best conditions in the recent samples. While local pollution problems affecting the qualitative aspects of the plankton diatom flora have been present for a long time, it should be pointed out that the floras of these inshore areas have now been very drastically altered and, more importantly, that the effects of pollution now are becoming increasingly evident throughout the system.

The areal distribution of the major plankton dominant taxa follows the trends one would expect from consideration of the location of major effluent sources with one striking exception. The plankton floras of southern Green Bay and local areas surrounding harbors and major stream mouths most strongly differ from the flora of the open lake. The extreme southern crescent of the lake, from Chicago to Benton Harbor, Michigan, is also obviously and strongly affected. Somewhat surprisingly, it also appears that the Ludington-Manistee-Frankfort area of the northern Michigan coast is apparently quite substantially disturbed. From the qualitative aspects of the flora it is suggested that this disturbance is largely the result of shifts in the conservative element balance rather than particularly high nutrient levels. From considerations of effluent sources and the morphometry of Lake Michigan, it is tempting to assume that the southern basin of the lake might be much more strongly affected by pollution than the northern basin. Our results tend to indicate that this is only partially true. It appears that the nearshore floras of the southern basin are more strongly affected than similar areas in the northern basin. On the other hand, more recent blooms of introduced organisms appear at stations in the northern basin also.

One of the striking observations from the present study is the large number of rare species that were recorded from our collections. We entered this study with the apparently rather naive assumption that the offshore plankton of Lake Michigan would not be available to other than euplanktonic forms and thus the plankton assemblages would resemble true oceanic plankton more than limnoplankton. This assumption proved to be, at best, only partially correct. On a quantitative basis it is true that ten or less entities usually comprise more than ninety percent of the total assemblage. It is also true, however, that these major dominants rarely exceed twenty percent of the species noted at a given station. In a given

assemblage a certain fraction of these minor species are euplanktonic forms present in low abundance. In almost all collections there are also sizable fractions of entities that are obviously derived from habitats other than the plankton. As would be expected, these entities are most abundant in collections taken from shallow water areas but they are also represented in the majority of collections taken even from midlake stations. The significance of this component of the flora is very difficult to determine. Included in it are a large number of apparent new records for the United States and a number of entities which are apparently undescribed. I have previously speculated (1967) that one of the effects of nutrient pollution in Lake Michigan is to render the plankton environment more accessible to entities which find their primary habitat in benthic assemblages. The results of this study would tend to support this contention. Any assessment of the impact this component of the flora has on practical problems in water quality control, or even of their value as indicators of environmental conditions, is extremely difficult at the present time. A good deal of further work will be necessary before this information can be reduced to a useful context. It is, however, obvious that any realistic attempt to treat the factors operational in the Great Lakes ecosystem must account for this component of the biota which has never, as yet, been investigated in a systematic manner.

Prior to 1966 slightly less than 350 taxa of diatoms had been reported from Lake Michigan. Removal of the obvious synonyms from this list reduces this number to something less than 300. In the present study more than 700 morphologically distinguishable entities were noted. Considering the fact that only plankton collections, which are depauperate in species compared to periphyton collections, were examined, it is obvious that our knowledge of the biological operators at this level of the Lake Michigan ecosystem is still quite primitive. There is still need for critical taxonomic revision of some of the genera present. This is particularly true of some of the highly variable planktonic genera such as *Synedra* and *Fragilaria*. Even for the entities well enough known so that it is possible to make firm statements about their taxonomic relationships, there is still a critical lack of knowledge regarding life cycles and quantitative environmental requirements. Of the entities treated here, the complete life cycles of less than twenty are fully known. For even fewer is there any trustworthy experimental information regarding nutrient and other environmental requirements. If we are ever to be able to gain the necessary insight to understand and manage large aquatic ecosystems, such as Lake Michigan, such information must be forthcoming. It is hoped that this study will furnish part of the necessary background to implement such studies.

When working with large, complex and variable assemblages as was necessary in this study, it is tempting to seek some measure of the distribution of populations within the various assemblages which will furnish insight into the factors affecting them. One of the obvious statistical devices to employ in this context is diversity analysis. One approach to this has been used by a group at the Academy of Natural Sciences of Philadelphia with apparent success in determining the effects of pollution on

stream diatom populations (Patrick, Hohn and Wallace 1954; Patrick 1963, 1964). In the present study, preliminary analysis of the method utilized by these workers indicated serious difficulty in applying it to plankton diatom populations in Lake Michigan. Their diversity calculations are based on the log normal population model advanced by Preston (1948). Hutchinson (1967) has pointed out that in plankton assemblages tolerable fit to a log normal curve may be achieved but that the mode remains at the origin even if very large assemblages are considered. In our analysis we adopted an information theory based diversity estimate which has been used, with apparent success, in determining shifts in subfossil diatom populations (Stockner and Benson 1967; Stoermer and Yang 1968). The results of this analysis are presented in appendix "A." Although this manipulation brought to light some points of interest, it is emphasized that diversity alone furnishes very little information regarding the trophic status of Lake Michigan plankton diatom populations. If all the assemblages are considered, the modal diversity values fall at 1.80 and the modal redundancy values fall at 0.60. If localities are considered it is apparent that the extremes, both high and low, of diversity and redundancy are found in harbor collections. If the offshore stations are considered it is apparent that the range of diversity values recorded at a given sampling station on successive sampling dates is, in most instances, fully as great as the difference between any two offshore sampling stations at a given date. On the basis of our observations there is a slight tendency for the average diversity, as measured by the index employed, to increase with eutrophication in Lake Michigan and for redundancy values to be reduced. This picture is complicated by the fact that most areas of the lake that are appreciably affected are also in nearshore localities which are more easily invaded by entities arising from benthic communities.

The following picture emerges from our consideration of diversity plankton diatom assemblages in Lake Michigan. Before the influence of man's activities, nutrients were at such low levels that many potential occupants of the habitat were effectively excluded. This is reflected in assemblages of rather low diversity. In addition plankton populations are strongly affected by seasonal succession. The dominant populations wax and wane during the seasonal cycle and these shifts are strongly reflected in diversity estimates derived from samples taken at successive points in time. It will be noted that the spring bloom tends to depress diversity and the progression of this bloom can be traced from south to north during 1964 and 1967 by reference to the diversity values given in appendix "A." During this stage in succession average diversity values will be low and extremes, both high and low, will be minimized. With addition of nutrients to such an environment it will be rendered available to more taxa, but the added nutrients will also allow increased population densities of the dominant taxa during blooms. This produces the effect that we presently see in Lake Michigan. There is a slight average increase in diversity but the extreme high and low values found in specific spot samples both exceed those found in the unaltered environment. As further nutrients are added, the favored species will occur in increasing densities but fewer taxa will be added to the total assemblage.

This would produce further spread in the possible values from spot samples, but average diversity values from many samples taken during a given season would closely approximate the values derived from samples from the unaltered environment. With gross pollution the plankton habitat would be denied to many species and those tolerant of such conditions would occur in very high density, hence diversity would be strongly depressed.

In previous studies related to water quality, diversity information has largely been used to detect exactly these conditions. This would certainly not be a viable context for the Great Lakes. Because of the extremely long residency time of water in the lakes and because their main utility lies in their aesthetic appeal and as a source for very high-quality potable water, adequate indicative criteria of water quality should be based on more subtle assessments. If the problem of time course considerations could be escaped, diversity measurements would be of much greater value in plankton studies. It should be pointed out that this is exactly the case in studies of fossil assemblages where an integration of the yearly floristic succession is obtained. It would appear that this is the reason why diversity measurements are a much more satisfactory tool in these studies.

## SUMMARY

1. The present study shows a considerably more diverse diatom flora in Lake Michigan than had been reported previously. Contrary to expectations, a substantial number of the entities taken in plankton collections are obviously derived from benthic communities.

2. There has been an increase in the relative numbers of entities associated with degradation of water quality during the period of study. Certain entities associated with moderate to high levels of pollution which were not noted in earlier collections were apparently introduced prior to 1937 and now cause nuisances in certain inshore areas and are becoming increasingly abundant at offshore stations throughout the lake. Certain entities associated with extreme degradation of water quality in the Great Lakes system were introduced into Lake Michigan between 1947 and 1964. Although now present in only low numbers, they indicate the pollution of Lake Michigan is reaching critical levels.

3. Extreme differences exist, particularly at certain times of the year, between the coastal areas and open waters of the lake in terms of both abundance and species composition of the phytoplankton flora.

4. On the basis of the plankton diatom assemblages present, it appears that the most strongly affected areas of Lake Michigan are: the extreme southern crescent of the lake, from Chicago, Illinois, to Benton Harbor, Michigan; the southern portion of Green Bay; the northern Michigan coast in the Ludington-Manistee-Frankfort area. In addition, local problems exist around most of the major harbors.

5. Our study suggests that diversity estimates, based on single plankton collections, offer relatively little information regarding the condition of the waters sampled.

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## Appendix A

### List of Collections

Collections listed without alphabetical prefix are housed in the collection of the Great Lakes Research Division. Those with the prefix ANSP are the property of and are housed at the Academy of Natural Sciences, Philadelphia. In the case of collections in which the diatom assemblage has been analyzed in detail the following characteristics are listed: the total number of species present, the total number of specimens in the assemblage, an estimate of diversity computed as  $H = - \sum_{i=1} p_i \ln p_i$  where  $p_i$

represents an estimate of the proportion of the  $i^{\text{th}}$  species, and an estimate of redundancy computed as  $R = 1 - H / \ln S$ . Other collections have been examined in greater or lesser detail but have not been counted.

- 804 Shore plankton from beach near entrance to Wilderness St. Park, Michigan. Coll: E. F. Stoermer. 28 Sept. 1965.
- 810 Surface plankton from north side of Mackinaw City Public Dock, Mackinaw City, Michigan. Coll: E. F. Stoermer. 28 Sept. 1965.
- 826 Surface plankton from river side of breakwater, Elk River. Coll: E. F. Stoermer. 29 Sept. 1965.
- 827 Surface plankton from Lake Michigan side of breakwater, Elk River, Michigan. Coll: E. F. Stoermer. 29 Sept. 1965.
- 841 Surface plankton, Muskegon Lake, Michigan, near harbor entrance. Coll: E. F. Stoermer. 4 Oct. 1965.
- 842 Surface plankton, Lake Michigan, 7 mi at 210° from White Lake, Michigan, inlet, 9 mi 300° from Muskegon, Michigan, inlet. Coll: E. F. Stoermer. 5 Oct. 1965.
- 844 Plankton, surface, Station A-3. 42°05'30"N; 86°43'00"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 845 Plankton, 5 meters, Station A-3. 42°05'30"N; 86°43'00"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 846 Plankton, 15 meters, Station A-3. 42°05'30"N; 86°43'00"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 847 Plankton, surface, Station A-4. 42°03'30"N; 87°06'30"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 848 Plankton, 5 meters, Station A-4. 42°03'30"N; 87°06'30"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 849 Plankton, 15 meters, Station A-4. 42°03'30"N; 87°06'30"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 850 Plankton, surface, Station A-6. 41°52'00"N; 87°27'00"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 851 Plankton, 5 meters, Station A-6. 41°52'00"N; 87°27'00"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 852 Plankton, 15 meters, Station A-6. 41°52'00"N; 87°27'00"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 853 Plankton, surface, Station C-3. 42°49'10"N; 86°28'25"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 854 Plankton, 5 meters, Station C-3. 42°49'10"N; 86°28'25"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 855 Plankton, 15 meters, Station C-3. 42°49'10"N; 86°28'25"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).

- 856 Plankton, surface, Station C-5. 42°49'00"N; 86°50'00"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 857 Plankton, 5 meters, Station C-5. 42°49'00"N; 86°50'00"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 858 Plankton, 15 meters, Station C-5. 42°49'00"N; 86°50'00"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 859 Plankton, surface, Station C-7. 42°47'30"N; 87°34'30"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 860 Plankton, 5 meters, Station C-7. 42°47'30"N; 87°34'30"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 861 Plankton, 15 meters, Station C-7. 42°47'30"N; 87°34'30"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 862 Plankton, surface, Station D-2. 43°56'00"N; 86°39'30"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 863 Plankton, 5 meters, Station D-2. 43°56'00"N; 86°39'30"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 864 Plankton, 15 meters, Station D-2. 43°56'00"N; 86°39'30"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 865 Plankton, surface, Station D-4. 43°48'00"N; 87°03'00"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 866 Plankton, 5 meters, Station D-4. 43°48'00"N; 87°03'00"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 867 Plankton, 15 meters, Station D-4. 43°48'00"N; 87°03'00"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 868 Plankton, surface, Station D-5. 43°38'40"N; 87°31'00"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 869 Plankton, 5 meters, Station D-5. 43°38'40"N; 87°31'00"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 870 Plankton, 15 meters, Station D-5. 43°38'40"N; 87°31'00"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 871 Plankton, surface, Station E-2. 44°37'00"N; 86°21'42"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 872 Plankton, 5 meters, Station E-2. 44°37'00"N; 86°21'42"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 873 Plankton, 15 meters, Station E-2. 44°37'00"N; 86°21'42"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 874 Plankton, surface, Station E-3. 44°34'00"N; 86°40'00"W. Coll:  
E. F. Stoermer. 12 Nov. 1965 (500 ml).

- 875 Plankton, 5 meters, Station E-3. 44°34'00"N; 86°40'00"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 876 Plankton, 15 meters, Station E-3. 44°34'00"N; 86°40'00"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 877 Plankton, surface, Station E-5. 44°25'30"N; 87°10'18"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 878 Plankton, 5 meters, Station E-5. 44°25'30"N; 87°10'18"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 879 Plankton, 15 meters, Station E-5. 44°25'30"N; 87°10'18"W. Coll: E. F. Stoermer. 12 Nov. 1965 (500 ml).
- 883 #25 net surface plankton, 8 mi. at 269° off Grand Haven, Michigan. Coll: E. F. Stoermer. 12 Jan. 1966.
- 896 Plankton from Grand River in town of Spring Lake, Ottawa County, Michigan. Coll: E. F. Stoermer. 13 April 1966.
- 898 Plankton, surface, Station A-3. 42°05'30"N; 86°43'00"W. Coll: E. F. Stoermer. 28 March 1966 (500 ml).
- 899 Plankton, 5 meters, Station A-3. 42°05'30"N; 86°43'00"W. Coll: E. F. Stoermer. 28 March 1966 (500 ml).
- 900 Plankton, 15 meters, Station A-3. 42°05'30"N; 86°43'00"W. Coll: E. F. Stoermer. 28 March 1966 (500 ml).
- 901 Plankton, surface, Station A-4. 42°03'30"N; 87°06'30"W. Coll: E. F. Stoermer. 28 March 1966 (500 ml).
- 902 Plankton, 5 meters, Station A-4. 42°03'30"N; 87°06'30"W. Coll: E. F. Stoermer. 28 March 1966 (500 ml).
- 903 Plankton, 15 meters, Station A-4. 42°03'30"N; 87°06'30"W. Coll: E. F. Stoermer. 28 March 1966 (500 ml).
- 904 Plankton, surface, Station A-6. 41°52'00"N; 87°27'00"W. Coll: E. F. Stoermer. 28 March 1966 (500 ml).
- 905 Plankton, 5 meters, Station A-6. 41°52'00"N; 87°27'00"W. Coll: E. F. Stoermer. 28 March 1966 (500 ml).
- 906 Plankton, 15 meters, Station A-6. 41°52'00"N; 87°27'00"W. Coll: E. F. Stoermer. 28 March 1966 (500 ml).
- 907 Plankton, surface, Station C-3. 42°49'10"N; 86°28'25"W. Coll: E. F. Stoermer. 20 March 1966 (500 ml).
- 908 Plankton, 5 meters, Station C-3. 42°49'10"N; 86°28'25"W. Coll: E. F. Stoermer. 20 March 1966 (500 ml).
- 909 Plankton, 15 meters, Station C-3. 42°49'10"N; 86°28'25"W. Coll: E. F. Stoermer. 20 March 1966 (500 ml).



- 910 Plankton, surface, Station C-5. 42°49'00"N; 86°50'00"W. Coll:  
E. F. Stoermer. 20 March 1966 (500 ml).
- 911 Plankton, 5 meters, Station C-5. 42°49'00"N; 86°50'00"W. Coll:  
E. F. Stoermer. 20 March 1966 (500 ml).
- 912 Plankton, 15 meters, Station C-5. 42°49'00"N; 86°50'00"W. Coll:  
E. F. Stoermer. 20 March 1966 (500 ml).
- 913 Plankton, surface, Station C-7. 42°47'30"N; 87°34'30"W. Coll:  
E. F. Stoermer. 20 March 1966 (500 ml).
- 914 Plankton, 5 meters, Station C-7. 42°47'30"N; 87°34'30"W. Coll:  
E. F. Stoermer. 20 March 1966 (500 ml).
- 915 Plankton, 15 meters, Station C-7. 42°47'30"N; 87°34'30"W. Coll:  
E. F. Stoermer. 20 March 1966 (500 ml).
- 916 Plankton, surface, Station D-2. 43°56'00"N; 86°39'30"W. Coll:  
E. F. Stoermer. 3 April 1966 (500 ml).
- 917 Plankton, 5 meters, Station D-2. 43°56'00"N; 86°39'30"W. Coll:  
E. F. Stoermer. 3 April 1966 (500 ml).
- 918 Plankton, 15 meters, Station D-2. 43°56'00"N; 86°39'30"W. Coll:  
E. F. Stoermer. 3 April 1966 (500 ml).
- 919 Plankton, surface, Station D-4. 43°48'00"N; 87°03'00"W. Coll:  
E. F. Stoermer. 3 April 1966 (500 ml).
- 920 Plankton, 5 meters, Station D-4. 43°48'00"N; 87°03'00"W. Coll:  
E. F. Stoermer. 3 April 1966 (500 ml).
- 921 Plankton, 15 meters, Station D-4. 43°48'00"N; 87°03'00"W. Coll:  
E. F. Stoermer. 3 April 1966 (500 ml).
- 922 Plankton, surface, Station D-5. 43°38'40"N; 87°31'00"W. Coll:  
E. F. Stoermer. 3 April 1966 (500 ml).
- 923 Plankton, 5 meters, Station D-5. 43°38'40"N; 87°31'00"W. Coll:  
E. F. Stoermer. 3 April 1966 (500 ml).
- 924 Plankton, 15 meters, Station D-5. 43°38'40"N; 87°31'00"W. Coll:  
E. F. Stoermer. 3 April 1966 (500 ml).
- 925 Plankton, surface, Station E-2. 44°37'00"N; 86°21'42"W. Coll:  
E. F. Stoermer. 6 April 1966 (500 ml).
- 926 Plankton, 5 meters, Station E-2. 44°37'00"N; 86°21'42"W. Coll:  
E. F. Stoermer. 6 April 1966 (500 ml).
- 927 Plankton, 15 meters, Station E-2. 44°37'00"N; 86°21'42"W. Coll:  
E. F. Stoermer. 6 April 1966 (500 ml).
- 928 Plankton, surface, Station E-3. 44°34'00"N; 86°40'00"W. Coll:  
E. F. Stoermer. 6 April 1966 (500 ml).

- 929 Plankton, 5 meters, Station E-3. 44°34'00"N; 86°40'00"W. Coll: E. F. Stoermer. 6 April 1966 (500 ml).
- 930 Plankton, 15 meters, Station E-3. 44°34'00"N; 86°40'00"W. Coll: E. F. Stoermer. 6 April 1966 (500 ml).
- 931 Plankton, surface, Station E-5. 44°25'30"N; 87°10'18"W. Coll: E. F. Stoermer. 6 April 1966 (500 ml).
- 932 Plankton, 5 meters, Station E-5. 44°25'30"N; 87°10'18"W. Coll: E. F. Stoermer. 6 April 1966 (500 ml).
- 933 Plankton, 15 meters, Station E-5. 44°25'30"N; 87°10'18"W. Coll: E. F. Stoermer. 6 April 1966 (500 ml).
- 938 Plankton, surface, Station A-3. 42°05'30"N; 86°43'00"W. Coll: E. F. Stoermer. 26 April 1966 (500 ml).
- 939 Plankton, 5 meters, Station A-3. 43°05'30"N; 86°43'00"W. Coll: E. F. Stoermer. 26 April 1966 (500 ml).
- 940 Plankton, 15 meters, Station A-3. 42°05'30"N; 86°43'00"W. Coll: E. F. Stoermer. 26 April 1966 (500 ml).
- 941 Plankton, surface, Station A-4. 42°03'30"N; 87°06'30"W. Coll: E. F. Stoermer. 26 April 1966 (500 ml).
- 942 Plankton, 5 meters, Station A-4. 42°03'30"N; 87°06'30"W. Coll: E. F. Stoermer. 26 April 1966 (500 ml).
- 943 Plankton, 15 meters, Station A-4. 42°03'30"N; 87°06'30"W. Coll: E. F. Stoermer. 26 April 1966 (500 ml).
- 944 Plankton, surface, Station A-6. 41°52'00"N; 87°27'00"W. Coll: E. F. Stoermer. 26 April 1966 (500 ml).
- 945 Plankton, 5 meters, Station A-6. 41°52'00"N; 87°27'00"W. Coll: E. F. Stoermer. 26 April 1966 (500 ml).
- 946 Plankton, 15 meters, Station A-6. 41°52'00"N; 87°27'00"W. Coll: E. F. Stoermer. 26 April 1966 (500 ml).
- 947 Plankton, surface, Station B-3. 42°24'00"N; 86°35'20"W. Coll: C. F. Powers. 25 April 1966 (500 ml).
- 948 Plankton, 5 meters, Station B-3. 42°24'00"N; 86°35'20"W. Coll: C. F. Powers. 25 April 1966 (500 ml).
- 949 Plankton, 15 meters, Station B-3. 42°24'00"N; 86°35'20"W. Coll: C. F. Powers. 25 April 1966 (500 ml).
- 950 Plankton, surface, Station B-4. 42°23'30"N; 87°01'30"W. Coll: C. F. Powers. 25 April 1966 (500 ml).
- 951 Plankton, 5 meters, Station B-4. 42°23'30"N; 87°01'30"W. Coll: C. F. Powers. 25 April 1966 (500 ml).

- 952 Plankton, 15 meters, Station B-4. 42°23'30"N; 87°01'30"W. Coll: C. F. Powers. 25 April 1966 (500 ml).
- 953 Plankton, surface, Station B-6. 42°22'30"N; 87°30'00"W. Coll: C. F. Powers. 25 April 1966 (500 ml).
- 954 Plankton, 5 meters, Station B-6. 42°22'30"N; 87°30'00"W. Coll: C. F. Powers. 25 April 1966 (500 ml).
- 955 Plankton, 15 meters, Station B-6. 42°22'30"N; 87°30'00"W. Coll: C. F. Powers. 25 April 1966 (500 ml).
- 956 Plankton, surface, Station C-3. 42°49'10"N; 86°28'25"W. Coll: E. F. Stoermer. 28 April 1966 (500 ml).
- 957 Plankton, 5 meters, Station C-3. 42°49'10"N; 86°28'25"W. Coll: E. F. Stoermer. 28 April 1966 (500 ml).
- 958 Plankton, 15 meters, Station C-3. 42°49'10"N; 86°28'25"W. Coll: E. F. Stoermer. 28 April 1966 (500 ml).
- 959 Plankton, surface, Station C-5. 42°49'00"N; 86°50'00"W. Coll: E. F. Stoermer. 28 April 1966 (500 ml).
- 960 Plankton, 5 meters, Station C-5. 42°49'00"N; 86°50'00"W. Coll: E. F. Stoermer. 28 April 1966 (500 ml).
- 961 Plankton, 15 meters, Station C-5. 42°49'00"N; 86°50'00"W. Coll: E. F. Stoermer. 28 April 1966 (500 ml).
- 962 Plankton, surface, Station C-7. 42°47'30"N; 87°34'30"W. Coll: E. F. Stoermer. 28 April 1966 (500 ml).
- 963 Plankton, 5 meters, Station C-7. 42°47'30"N; 87°34'30"W. Coll: E. F. Stoermer. 28 April 1966 (500 ml).
- 964 Plankton, 15 meters, Station C-7. 42°47'30"N; 87°34'30"W. Coll: E. F. Stoermer. 28 April 1966 (500 ml).
- 965 Plankton, surface, Station D-2. 43°56'00"N; 86°39'30"W. Coll: E. F. Stoermer. 28 April 1966 (500 ml).
- 966 Plankton, 5 meters, Station D-2. 43°56'00"N; 86°39'30"W. Coll: E. F. Stoermer. 28 April 1966 (500 ml).
- 967 Plankton, 15 meters, Station D-2. 43°56'00"N; 86°39'30"W. Coll: E. F. Stoermer. 28 April 1966 (500 ml).
- 968 Plankton, surface, Station D-4. 43°48'00"N; 87°03'00"W. Coll: E. F. Stoermer. 28 April 1966 (500 ml).
- 969 Plankton, 5 meters, Station D-4. 43°48'00"N; 87°03'00"W. Coll: E. F. Stoermer. 28 April 1966 (500 ml).
- 970 Plankton, 15 meters, Station D-4. 43°48'00"N; 87°03'00"W. Coll: E. F. Stoermer. 28 April 1966 (500 ml).

- 971 Plankton, surface, Station D-5. 43°38'40"N; 87°31'00"W. Coll:  
E. F. Stoermer. 28 April 1966 (500 ml).
- 972 Plankton, 5 meters, Station D-5. 43°38'40"N; 87°31'00"W. Coll:  
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- 973 Plankton, 15 meters, Station D-5. 43°38'40"N; 87°31'00"W. Coll:  
E. F. Stoermer. 28 April 1966 (500 ml).
- 974 Plankton, surface, Station E-2. 44°37'00"N; 86°21'42"W. Coll:  
E. F. Stoermer. 26 April 1966 (500 ml).
- 975 Plankton, 5 meters, Station E-2. 44°37'00"N; 86°21'42"W. Coll:  
E. F. Stoermer. 26 April 1966 (500 ml).
- 976 Plankton, 15 meters, Station E-2. 44°37'00"N; 86°21'42"W. Coll:  
E. F. Stoermer. 26 April 1966 (500 ml).
- 977 Plankton, surface, Station E-3. 44°34'00"N; 86°40'00"W. Coll:  
E. F. Stoermer. 26 April 1966 (500 ml).
- 978 Plankton, 5 meters, Station E-3. 44°34'00"N; 86°40'00"W. Coll:  
E. F. Stoermer. 26 April 1966 (500 ml).
- 979 Plankton, 15 meters, Station E-3. 44°34'00"N; 86°40'00"W. Coll:  
E. F. Stoermer. 26 April 1966 (500 ml).
- 980 Plankton, surface, Station E-5. 44°25'30"N; 87°10'18"W. Coll:  
E. F. Stoermer. 26 April 1966 (500 ml).
- 981 Plankton, 5 meters, Station E-5. 44°25'30"N; 87°10'18"W. Coll:  
E. F. Stoermer. 26 April 1966 (500 ml).
- 982 Plankton, 15 meters, Station E-5. 44°25'30"N; 87°10'18"W. Coll:  
E. F. Stoermer. 26 April 1966 (500 ml).
- 983 Plankton, surface, Station A-3. 42°05'30"N; 86°43'00"W. Coll:  
E. F. Stoermer. 15 May 1966 (500 ml).
- 984 Plankton, 5 meters, Station A-3. 42°05'30"N; 86°43'00"W. Coll:  
E. F. Stoermer. 15 May 1966 (500 ml).
- 985 Plankton, 15 meters, Station A-3. 42°05'30"N; 86°43'00"W. Coll:  
E. F. Stoermer. 15 May 1966 (500 ml).
- 986 Plankton, surface, Station A-4. 42°03'30"N; 87°06'30"W. Coll:  
E. F. Stoermer. 15 May 1966 (500 ml).
- 987 Plankton, 5 meters, Station A-4. 42°03'30"N; 87°06'30"W. Coll:  
E. F. Stoermer. 15 May 1966 (500 ml).
- 988 Plankton, 15 meters, Station A-4. 42°03'30"N; 87°06'30"W. Coll:  
E. F. Stoermer. 15 May 1966 (500 ml).
- 989 Plankton, surface, Station A-6. 41°52'00"N; 87°27'00"W. Coll:  
E. F. Stoermer. 15 May 1966 (500 ml).

- 990 Plankton, 5 meters, Station A-6. 41°52'00"N; 87°27'00"W. Coll: E. F. Stoermer. 15 May 1966 (500 ml).
- 991 Plankton, 15 meters, Station A-6. 41°52'00"N; 87°27'00"W. Coll: E. F. Stoermer. 15 May 1966 (500 ml).
- 992 Plankton, surface, Station B-3. 42°24'00"N; 86°35'20"W. Coll: C. F. Powers. 16 May 1966 (500 ml).
- 993 Plankton, 5 meters, Station B-3. 42°24'00"N; 86°35'20"W. Coll: C. F. Powers. 16 May 1966 (500 ml).
- 994 Plankton, 15 meters, Station B-3. 42°24'00"N; 86°35'20"W. Coll: C. F. Powers. 16 May 1966 (500 ml).
- 995 Plankton, surface, Station B-4. 42°23'30"N; 87°01'30"W. Coll: C. F. Powers. 16 May 1966 (500 ml).
- 996 Plankton, 5 meters, Station B-4. 42°23'30"N; 87°01'30"W. Coll: C. F. Powers. 16 May 1966 (500 ml).
- 997 Plankton, 15 meters, Station B-4. 42°23'30"N; 87°01'30"W. Coll: C. F. Powers. 16 May 1966 (500 ml).
- 998 Plankton, surface, Station B-6. 42°22'30"N; 87°30'00"W. Coll: C. F. Powers. 16 May 1966 (500 ml).
- 999 Plankton, 5 meters, Station B-6. 42°22'30"N; 87°30'00"W. Coll: C. F. Powers. 16 May 1966 (500 ml).
- 1000 Plankton, 15 meters, Station B-6. 42°22'30"N; 87°30'00"W. Coll: C. F. Powers. 16 May 1966 (500 ml).
- 1001 Plankton, surface, Station C-3. 42°49'10"N; 86°28'25"W. Coll: E. F. Stoermer. 16 May 1966 (500 ml).
- 1002 Plankton, 5 meters, Station C-3. 42°49'10"N; 86°28'25"W. Coll: E. F. Stoermer. 16 May 1966 (500 ml).
- 1003 Plankton, 15 meters, Station C-3. 42°49'10"N; 86°28'25"W. Coll: E. F. Stoermer. 16 May 1966 (500 ml).
- 1004 Plankton, surface, Station C-5. 42°49'00"N; 86°50'00"W. Coll: E. F. Stoermer. 16 May 1966 (500 ml).
- 1005 Plankton, 5 meter, Station C-5. 42°49'00"N; 86°50'00"W. Coll: E. F. Stoermer. 16 May 1966 (500 ml).
- 1006 Plankton, 15 meters, Station C-5. 42°49'00"N; 86°50'00"W. Coll: E. F. Stoermer. 16 May 1966 (500 ml).
- 1007 Plankton, surface, Station C-7. 42°47'30"N; 87°34'30"W. Coll: E. F. Stoermer. 16 May 1966 (500 ml).
- 1008 Plankton, 5 meters, Station C-7. 42°47'30"N; 87°34'30"W. Coll: E. F. Stoermer. 16 May 1966 (500 ml).

- 1009 Plankton, 15 meters, Station C-7. 42°47'30"N; 87°34'30"W. Coll:  
E. F. Stoermer. 16 May 1966 (500 ml).
- 1010 Plankton, surface, Station D-2. 43°56'00"N; 86°39'30"W. Coll:  
E. F. Stoermer. 17 May 1966 (500 ml).
- 1011 Plankton, 5 meters, Station D-2. 43°56'00"N; 86°39'30"W. Coll:  
E. F. Stoermer. 17 May 1966 (500 ml).
- 1012 Plankton, 15 meters, Station D-2. 43°56'00"N; 86°39'30"W. Coll:  
E. F. Stoermer. 17 May 1966 (500 ml).
- 1013 Plankton, surface, Station D-4. 43°48'00"N; 87°03'00"W. Coll:  
E. F. Stoermer. 17 May 1966 (500 ml).
- 1014 Plankton, 5 meters, Station D-4. 43°48'00"N; 87°03'00"W. Coll:  
E. F. Stoermer. 17 May 1966 (500 ml).
- 1015 Plankton, 15 meters, Station D-4. 43°48'00"N; 87°03'00"W. Coll:  
E. F. Stoermer. 17 May 1966 (500 ml).
- 1016 Plankton, surface, Station D-5. 43°38'40"N; 87°31'00"W. Coll:  
E. F. Stoermer. 17 May 1966 (500 ml).
- 1017 Plankton, 5 meters, Station D-5. 43°38'40"N; 87°31'00"W. Coll:  
E. F. Stoermer. 17 May 1966 (500 ml).
- 1018 Plankton, 15 meters, Station D-5. 43°38'40"N; 87°31'00"W. Coll:  
E. F. Stoermer. 17 May 1966 (500 ml).
- 1019 Plankton, surface, Station E-2. 44°37'00"N; 86°21'42"W. Coll:  
E. F. Stoermer. 20 May 1966 (500 ml).
- 1020 Plankton, 5 meters, Station E-2. 44°37'00"N; 86°21'42"W. Coll:  
E. F. Stoermer. 20 May 1966 (500 ml).
- 1021 Plankton, 15 meters, Station E-2. 44°37'00"N; 86°21'42"W. Coll:  
E. F. Stoermer. 20 May 1966 (500 ml).
- 1022 Plankton, surface, Station E-3. 44°34'00"N; 86°40'00"W. Coll:  
E. F. Stoermer. 20 May 1966 (500 ml).
- 1023 Plankton, 5 meters, Station E-3. 44°34'00"N; 86°40'00"W. Coll:  
E. F. Stoermer. 20 May 1966 (500 ml).
- 1024 Plankton, 15 meters, Station E-3. 44°34'00"N; 86°40'00"W. Coll:  
E. F. Stoermer. 20 May 1966 (500 ml).
- 1025 Plankton, surface, Station E-5. 44°25'30"N; 87°10'18"W. Coll:  
E. F. Stoermer. 20 May 1966 (500 ml).
- 1026 Plankton, 5 meters, Station E-5. 44°25'30"N; 87°10'18"W. Coll:  
E. F. Stoermer. 20 May 1966 (500 ml).
- 1027 Plankton, 15 meters, Station E-5. 44°25'30"N; 87°10'18"W. Coll:  
E. F. Stoermer. 20 May 1966 (500 ml).

- 1033 Plankton (#25 net), Garden Creek, near outlet in town of Garden, Delta County, Michigan. Sec. 17, R18W, Twp 39N. Coll: E. F. Stoermer. 20 June 1966.
- 1035 Plankton near shore (#25 net), fishing access site near town of Garden, Delta County, Michigan. Sec. 18, R18W, T39N. Coll: E. F. Stoermer. 20 June 1966.
- 1042 Shore plankton (#25 net), Sack Bay, Delta County, Michigan. Sec. 30, R19W, T38N. Coll: E. F. Stoermer. 20 June 1966.
- 1044 Shore plankton (#25 net), Sand Bay, near Fayette State Park, Delta County, Michigan. Sec. 9, R19W, T38N. Coll: E. F. Stoermer. 20 June 1966.
- 1046 Shore plankton (#25 net), Fayette Harbor, Fayette State Park, Delta County, Michigan. Sec. 4, R19W, T38N. Coll: E. F. Stoermer. 20 June 1966.
- 1056 Plankton, Harbor of Manistique, Schoolcraft County, Michigan. Sec. 12, R16W, T41. Considerable wood detritus, depauperate algal flora. Coll: E. F. Stoermer. 21 June 1966.
- 1060 Plankton - from ferry dock, St. Ignace, Mackinac County, Michigan. Sec. 18, R3W, T40N. Coll: E. F. Stoermer. 21 June 1966.
- 1092 Shore plankton from harbor, Cross Village. Sec. 33, R6W, T38N. Emmet County, Michigan. Coll: E. F. Stoermer. 23 June 1966.
- 1094 Shore plankton, City Park, Harbor Springs. Sec. 13, R6W, T35N. Emmet County, Michigan. Coll: E. F. Stoermer. 23 June 1966.
- 1095 Shore plankton, tile outlet just east of "Irish Marina." Sec. 18, R5W, T35N. Harbor Springs, Emmet County, Michigan. Coll: E. F. Stoermer. 23 June 1966.
- 1096 Plankton, Petoskey Harbor. Sec. 31, R5W, T35N. Emmet County, Michigan. Coll: E. F. Stoermer. 23 June 1966.
- 1100 Plankton ship channel, Charlevoix. Sec. 27, R8W, T34N. Charlevoix County, Michigan. Coll: E. F. Stoermer. 23 June 1966.
- 1102 Plankton, Lake Charlevoix, Charlevoix City Dock. Sec. 26, R8W, T34S. Charlevoix County, Michigan. Coll: E. F. Stoermer. 23 June 1966.
- 1105 Plankton, river side of breakwater, Elk Rapids. Sec. 20, R9W, T29N. Antrim County, Michigan. Coll: E. F. Stoermer. 23 June 1966.
- 1108 Shore plankton, harbor of Traverse City. Sec. 6, R10W, T27N. Grand Traverse County, Michigan. Coll: E. F. Stoermer. 23 June 1966.
- 1114 Plankton, Lake Michigan, 100 yds from confluence of Platte River. Sec. 20, R15W, T27N. Benzie State Park, Benzie County, Michigan. Coll: E. F. Stoermer. 23 June 1966.

- 1116 Plankton, Platte River, at confluence with Lake Michigan. Sec. 20, R15W, T27N. Benzie State Park, Benzie County, Michigan. Coll: E. F. Stoermer. 23 June 1966.
- 1121 Plankton, Lake Michigan just outside Frankfort breakwater. Sec. 28, R16W, T26N. Benzie County, Michigan. Coll: E. F. Stoermer. 24 June 1966.
- 1122 Plankton, Frankfort Harbor, just inside breakwater. Sec. 28, R16W, T26N. Benzie County, Michigan. Coll: E. F. Stoermer. 24 June 1966.
- 1125 Plankton just outside breakwater, Manistee. Sec. 3, R17W, T21N. Manistee County, Michigan. Coll: E. F. Stoermer. 24 June 1966.
- 1126 Plankton just inside breakwater, Manistee. Sec. 3, R17W, T21N. Manistee County, Michigan. *Melosira* dominant. Coll: E. F. Stoermer. 24 June 1966.
- 1128 Plankton inside harbor, Ludington. Sec. 16, R18W, T18N. Mason County, Michigan. Coll: E. F. Stoermer. 24 June 1966.
- 1130 Plankton just outside harbor, Ludington. Sec. 16, R18W, T18N. Mason County, Michigan. Coll: E. F. Stoermer. 24 June 1966.
- 1132 Shore plankton shallow water in Muskegon Lake, pier across from State Park office. Sec. 22, R17W, T10N. Muskegon State Park, Muskegon County, Michigan. Coll: E. F. Stoermer. 25 June 1966.
- 1135 Plankton, Muskegon Lake, just inside ship channel, Sec. 28, R17W, T10N. Muskegon County, Michigan. Coll: E. F. Stoermer. 25 June 1966.
- 1139 Plankton, inside Muskegon north piers. Sec. 29, R17W, T10N, Muskegon County, Michigan. Coll: E. F. Stoermer. 25 June 1966.
- 1141 Plankton, outside Muskegon north pier. Sec. 29, R17W, T10N. Muskegon County, Michigan. Coll: E. F. Stoermer. 25 June 1966.
- 1142 Plankton, 10 yds off campground beach, Muskegon State Park. Sec. 17, R17W, T10N. Muskegon County, Michigan. Coll: E. F. Stoermer. 25 June 1966.
- 1143 Plankton 100 yds off campground beach, Muskegon State Park. Sec. 17, R17W, T10N. Muskegon County, Michigan. Coll: E. F. Stoermer. 25 June 1966.
- 1144 Surface #20 net tow, Lake Michigan. Station GA-1a. 41°38.4'N; 87°19.0'W. Coll: A. Strong. 19 May 1966.
- 1145 Surface #20 net tow, Lake Michigan. Station GA-1b. 41°38.4'N; 87°19.0'W. Coll: A. Strong. 19 May 1966.
- 1164 Vertical #20 net tow, 55ft depth. Sleeping Bear Bay, Lake Michigan. Coll: Robert Anderson. 21 June 1966.
- 1192 Surface #20 net tow. Station PM-1. 45°46'30"N; 85°08'45"W. Lake Michigan. Coll: E. F. Stoermer. 21 Sept. 1966.



- 1193 Surface #20 net tow. Station PM-2. 45°24.0'N; 85°15.0'W. Lake Michigan. Mostly zooplankton. Coll: E. F. Stoermer. 21 August 1966.
- 1194 Surface #20 net tow. Station PM-3. 45°17.2'N; 85°55.0'W. Lake Michigan. Coll: E. F. Stoermer. 21 August 1966.
- 1195 Surface #20 net tow. Station PM-4. 45°01'18"N; 85°55'00"W. Lake Michigan. Coll: E. F. Stoermer. 22 August 1966.
- 1196 Vertical #20 net tow. Station MP-2. 44°57'48"N; 86°03'06"W. Lake Michigan. Coll: E. F. Stoermer. 22 August 1966.
- 1197 Vertical #20 net tow. Station AEC-1. 42°36.0'N; 86°59.0'W. Lake Michigan. Coll: E. F. Stoermer. 19 Sept. 1966.
- 1198 Vertical #20 net tow. Station AEC-2. 42°46.5'N; 87°02.5'W. Lake Michigan. Coll: E. F. Stoermer. 19 Sept. 1966.
- 1199 Vertical #20 net tow. Station AEC-3. 43°18.5'N; 86°42.5'W. Lake Michigan. Coll: E. F. Stoermer. 20 Sept. 1966.
- 1200 Vertical #20 net tow. Station AEC-4. 43°54.4'N; 86°49.0'W. Lake Michigan. Coll: E. F. Stoermer. 20 Sept. 1966.
- 1201 Vertical #20 net tow. Station AEC-5. 44°08.7'N; 86°42.6'W. Lake Michigan. Coll: E. F. Stoermer. 21 Sept. 1966.
- 1202 Vertical #20 net tow. Station AEC-6. 44°20.0'N; 86°43.1'W. Lake Michigan. Coll: E. F. Stoermer. 21 Sept. 1966.
- 1203 Vertical #20 net tow. Station AEC-7. 44°28.7'N; 86°43.1'W. Lake Michigan. Coll: E. F. Stoermer. 21 Sept. 1966.
- 1204 Vertical #20 net haul. Station A-1. 42°06'30"N; 86°32'00"W. Lake Michigan. Coll: J. Ayers. 26 Sept. 1966.
- 1205 Vertical #20 net haul. Station A-2. 42°06'00"N; 86°37'00"W. Lake Michigan. Coll: J. Ayers. 26 Sept. 1966.
- 1206 Vertical #20 net haul. Station A-3. 42°05'30"N; 86°43'00"W. Lake Michigan. Coll: J. Ayers. 27 Sept. 1966.
- 1207 Vertical #20 net haul. Station A-4. 42°03'30"N; 87°06'30"W. Lake Michigan. Coll: J. Ayers. 27 Sept. 1966.
- 1208 Vertical #20 net haul. Station A-5. 41°57'00"N; 87°18'30"W. Lake Michigan. Coll: J. Ayers. 27 Sept. 1966.
- 1209 Vertical #20 net haul. Station A-6. 41°52'00"N; 87°27'00"W. Lake Michigan. Coll: J. Ayers. 27 Sept. 1966.
- 1210 Vertical #20 net haul. Station C-1. 42°49'40"N; 86°14'50"W. Lake Michigan. Coll: J. Ayers. 26 Sept. 1966.
- 1211 Vertical #20 net haul. Station C-2. 42°49'40"N; 86°18'25"W. Lake Michigan. Coll: J. Ayers. 26 Sept. 1966.

- 1212 Vertical #20 net haul. Station C-3. 42°49'10"N; 86°28'25"W. Lake Michigan. Coll: J. Ayers. 26 Sept. 1966 (Extremely sparse phytoplankton).
- 1213 Vertical #20 net haul. Station C-4. 42°48'50"N; 86°41'30"W. Lake Michigan. Coll: J. Ayers. 28 Sept. 1966.
- 1214 Vertical #20 net haul. Station C-5. 42°49'00"N; 86°50'00"W. Lake Michigan. Coll: J. Ayers. 28 Sept. 1966.
- 1215 Vertical #20 net haul. Station C-6. 42°47'40"N; 87°26'50"W. Lake Michigan. Coll: J. Ayers. 28 Sept. 1966.
- 1216 Vertical #20 net haul. Station C-7. 42°47'30"N; 87°34'30"W. Lake Michigan. Coll: J. Ayers. 28 Sept. 1966.
- 1217 Vertical #20 net haul. Station E-1. 44°37'30"N; 86°18'12"W. Lake Michigan. Coll: J. Ayers. 2 Oct. 1966.
- 1218 Vertical #20 net haul. Station E-2. 44°37'00"N; 86°21'42"W. Lake Michigan. Coll: J. Ayers. 2 Oct. 1966.
- 1219 Vertical #20 net haul. Station E-3. 44°34'00"N; 86°40'00"W. Lake Michigan. Coll: J. Ayers. 2 Oct. 1966.
- 1220 Vertical #20 net haul. Station E-4. 44°30'18"N; 86°55'18"W. Lake Michigan. Coll: J. Ayers. 2 Oct. 1966.
- 1221 Vertical #20 net haul. Station #5. 44°25'30"N; 87°10'18"W. Lake Michigan. Coll: J. Ayers. 1 Oct. 1966.
- 1222 Vertical #20 net haul. Station E-6. 44°27'48"N; 87°26'25"W. Lake Michigan. Coll: J. Ayers. 1 Oct. 1966.
- 1223 #20 net sample, vertical haul, 83 m., Station B-3. 42°24'00"N; 86°35'30"W. Coll: C. F. Powers. 18 May 1964.  
26 spp. 63995 spec. H=0.848 R=0.740
- 1224 #20 net sample, vertical haul, 141 m., Station B-4. 42°23'30"N; 87°01'30"W. Coll: C. F. Powers. 18 May 1964.  
33 spp. 51005 spec. H=0.721 R=0.794
- 1225 #20 net sample, vertical haul, Station C-6. 42°47'40"N; 87°26'50"W. Coll: C. F. Powers. 15 May 1964.  
40 spp. 25510 spec. H=1.368 R=0.629
- 1226 #20 net sample, vertical haul, Station C-7. 42°47'30"N; 87°34'30"W. Coll: C. F. Powers. 16 May 1964.  
42 spp. 26280 spec. H=1.520 R=0.593
- 1227 #20 net sample, vertical haul, Station C-2. 43°12'00"N; 86°31'00"W. Coll: C. F. Powers. 13 May 1964.  
40 spp. 91190 spec. H=1.264 R=0.657

1228	#20 net sample, vertical haul, Station D-2. 43°56'00"N; 86°39'30"W. Coll: C. F. Powers. 14 May 1964. 46 spp. 51379 spec. H=1.243 R=0.675
1229	#20 net sample, vertical haul, Station D-5. 43°38'40"N; 87°31'00"W. Coll: C. F. Powers. 14 May 1964. 52 spp. 47291 spec. H=1.638 R=0.585
1230a	#20 net sample, vertical haul, Station E-2. 44°37'00"N; 86°21'42"W. Coll: C. F. Powers. 16 May 1964. 50 spp. 33745 spec. H=1.416 R=0.638
1231	#20 net sample, vertical haul, Station E-3. 44°34'00"N; 86°40'00"W. Coll: C. F. Powers. 16 May 1964. 51 spp. 40884 spec. H=1.225 R=0.688
1232	#20 net sample, vertical haul, Station E-5. 44°25'30"N; 87°10'18"W. Coll: C. F. Powers. 16 May 1964. 59 spp. 57498 spec. H=1.659 R=0.593
1233	#20 net sample, vertical haul, Station B-3. 42°24'00"N; 86°35'30"W. Coll: C. F. Powers. 5 June 1964. 37 spp. 41991 spec. H=1.673 R=0.537
1234a	#20 net sample, vertical haul, Station B-3. 42°24'00"N; 86°35'30"W. Coll: C. F. Powers. 18 June 1964. 38 spp. 35568 spec. H=1.574 R=0.567
1235a	#20 net sample, vertical haul, Station C-7. 42°47'30"N; 87°34'30"W. Coll: C. F. Powers. 16 June 1964. 35 spp. 35407 spec. H=1.446 R=0.593
1236	#20 net sample, vertical haul, Station C'-1. 43°08'00"N; 86°23'00"W. Coll: C. F. Powers. 8 June 1964. 64 spp. 57132 spec. H=1.668 R=0.599
1237a	#20 net sample, vertical haul, Station C'-2. 43°12'00"N; 86°31'00"W. Coll: C. F. Powers. 8 June 1964. 49 spp. 38790 spec. H=1.674 R=0.570
1238	#20 net sample, vertical haul, Station D-3. 43°54'00"N; 86°51'30"W. Coll: C. F. Powers. 11 June 1964. 44 spp. 50000 spec. H=0.972 R=0.743
1239	#20 net sample, vertical haul, Station D-4. 43°48'00"N; 87°03'00"W. Coll: C. F. Powers. 11 June 1964. 39 spp. 86175 spec. H=1.240 R=0.661
1240	#20 net sample, vertical haul, Station D-6. 43°44'00"N; 87°38'00"W. Coll: C. F. Powers. 10 June 1964. 83 spp. 65191 spec. H=1.398 R=0.684
1241	#20 net sample, vertical haul, Station E-2. 44°37'00"N; 86°21'42"W. Coll: C. F. Powers. 13 June 1964. 56 spp. 67634 spec. H=1.418 R=0.648

1242	#20 net sample, vertical haul, Station E-3. 44°34'00"N; 86°40'00"W. Coll: C. F. Powers. 13 June 1964. 44 spp. 66726 spec. H=0.629 R=0.834
1243	#20 net sample, vertical haul, Station E-6. 44°27'48"N; 87°26'25"W. Coll: C. F. Powers. 13 June 1964. 78 spp. 47892 spec. H=1.655 R=0.620
1244	#20 net sample, vertical haul, Station F-1. 45°21'45"N; 85°19'45"W. Coll: C. F. Powers. 11 June 1964. 89 spp. 91203 spec. H=1.500 R=0.666
1245a	#20 net sample, vertical haul, Station F-2. 45°28'30"N; 85°26'00"W. Coll: C. F. Powers. 11 June 1964 68 spp. 28922 spec. H=1.490 R=0.647
1246a	#20 net sample, vertical haul, Station F-3. 45°33'40"N; 85°30'45"W. Coll: C. F. Powers. 11 June 1964. 54 spp. 16733 spec. H=1.554 R=0.610
1247a	#20 net sample, vertical haul, Station B-3. 42°24'00"N; 86°35'30"W. Coll: C. F. Powers. 14 July 1964. 28 spp. 23427 spec. H=1.572 R=0.528
1248	#20 net sample, vertical haul, Station B-3. 42°24'00"N; 86°35'30"W. Coll: C. F. Powers. 24 July 1964. 34 spp. 50748 spec. H=1.626 R=0.539
1249	#20 net sample, vertical haul, Station C-3. 42°49'10"N; 86°28'25"W. Coll: C. F. Powers. 8 July 1964. 27 spp. 36820 spec. H=1.520 R=0.539
1250a	#20 net sample, vertical haul, Station C-6. 42°47'40"N; 87°26'50"W. Coll: C. F. Powers. 10 July 1964. 42 spp. 24325 spec. H=1.838 R=0.508
1251	#20 net sample, vertical haul, Station C-7. 42°47'30"N; 87°34'30"W. Coll: C. F. Powers. 16 July 1964. 37 spp. 34518 spec. H=1.422 R=0.606
1252	#20 net sample, vertical haul, Station C'-1. 43°08'00"N; 86°23'00"W. Coll: C. F. Powers. 16 July 1964. 55 spp. 35850 spec. H=1.682 R=0.580
1253	#20 net sample, vertical haul, Station C'-2. 43°12'00"N; 86°31'00"W. Coll: C. F. Powers. 16 July 1964. 43 spp. 43816 spec. H=1.647 R=0.562
1254	#20 net sample, vertical haul, Station D-2. 43°56'00"N; 86°39'30"W. Coll: C. F. Powers. 15 July 1964. 56 spp. 52210 spec. H=1.722 R=0.572
1255	#20 net sample, vertical haul, Station D-5. 43°38'40"N; 87°31'00"W. Coll: C. F. Powers. 15 July 1964. 55 spp. 38962 spec. H=2.048 R=0.489

- 1256 #20 net sample, vertical haul, Station E-2. 44°37'00"N; 86°21'42"W.  
Coll: C. F. Powers. 14 July 1964.  
73 spp. 54588 spec. H=1.533 R=0.638
- 1257 #20 net sample, vertical haul, Station E-3. 44°34'00"N; 86°40'00"W.  
Coll: C. F. Powers. 14 July 1964.  
63 spp. 41795 spec. H=1.464 R=0.647
- 1258 #20 net sample, vertical haul, Station F-1. 45°21'45"N; 85°19'45"W.  
Coll: C. F. Powers. 6 July 1964.  
117 spp. 42377 spec. H=1.984 R=0.583
- 1259 #20 net sample, vertical haul, Station F-2. 45°28'30"N; 85°26'00"W.  
Coll: C. F. Powers. 6 July 1964.  
78 spp. 32272 spec. H=1.988 R=0.544
- 1260 #20 net sample, vertical haul, Station F-3. 45°33'40"N; 85°30'45"W.  
Coll: C. F. Powers. 6 July 1964.  
89 spp. 52357 spec. H=2.012 R=0.552
- 1261 #20 net sample, vertical haul, Station B-3. 42°24'00"N; 86°35'30"W.  
Coll: C. F. Powers. 2 August 1964.  
31 spp. 50956 spec. H=1.278 R=0.628
- 1262 #20 net sample, vertical haul, Station B-3. 42°24'00"N; 86°35'30"W.  
Coll: C. F. Powers. 17 August 1964.  
31 spp. 47620 spec. H=1.254 R=0.635
- 1263 #20 net sample, vertical haul, Station C-7. 42°47'30"N; 87°34'30"W.  
Coll: C. F. Powers. 15 August 1964.  
20 spp. 24980 spec. H=1.214 R=0.595
- 1264 #20 net sample, vertical haul, Station C'-1. 43°08'00"N; 86°23'00"W.  
Coll: C. F. Powers. 10 August 1964.  
74 spp. 51792 spec. H=1.705 R=0.604
- 1265 #20 net sample, vertical haul, Station C'-2. 43°12'00"N; 86°31'00"W.  
Coll: C. F. Powers. 10 August 1964.  
52 spp. 44733 spec. H=1.571 R=0.602
- 1266 #20 net sample, vertical haul, Station D-3. 43°54'00"N; 86°51'30"W.  
Coll: C. F. Powers. 18 August 1964.  
44 spp. 28508 spec. H=2.259 R=0.403
- 1267 #20 net sample, vertical haul, Station D-6. 43°44'00"N; 87°38'00"W.  
Coll: C. F. Powers. 18 August 1964.  
38 spp. 46260 spec. H=1.289 R=0.646
- 1268 #20 net sample, vertical haul, Station E-2. 44°37'00"N; 86°21'42"W.  
Coll: C. F. Powers. 15 August 1964.  
82 spp. 36556 spec. H=2.081 R=0.528
- 1269 #20 net sample, vertical haul, Station E-3. 44°34'00"N; 86°40'00"W.  
Coll: C. F. Powers. 15 August 1964.  
50 spp. 36486 spec. H=2.007 R=0.487

1270	#20 net sample, vertical haul, Station F-1. 45°21'45"N; 85°19'45"W. Coll: C. F. Powers. 10 August 1964. 84 spp. 36725 spec. H=1.817 R=0.590
1271a	#20 net sample, vertical haul, Station C-7. 42°47'30"N; 87°34'30"W. Coll: C. F. Powers. 22 Sept. 1964. 39 spp. 15317 spec. H=0.984 R=0.731
1272	#20 net sample, vertical haul, Station C'-1. 43°08'00"N; 86°23'00"W. Coll: C. F. Powers. 10 Sept. 1964. 57 spp. 24363 spec. H=1.732 R=0.572
1273a	#20 net sample, vertical haul, Station C'-2. 43°12'00"N; 86°31'00"W. Coll: C. F. Powers. 10 Sept. 1964. 39 spp. 18599 spec. H=1.703 R=0.535
1274a	#20 net sample, vertical haul, Station D-1. 43°57'00"N; 86°33'00"W. Coll: C. F. Powers. 17 Sept. 1964. 49 spp. 21313 spec. H=1.700 R=0.563
1275	#20 net sample, vertical haul, Station D-2. 43°56'00"N; 86°39'30"W. Coll: C. F. Powers. 17 Sept. 1964. 52 spp. 15501 spec. H=1.770 R=0.552
1276a	#20 net sample, vertical haul, Station D-3. 43°54'00"N; 86°51'30"W. Coll: C. F. Powers. 18 Sept. 1964. 28 spp. 8948 spec. H=1.860 R=0.442
1277	#20 net sample, vertical haul, Station D-4. 43°48'00"N; 87°03'00"W. Coll: C. F. Powers. 18 Sept. 1964. 29 spp. 16138 spec. H=1.446 R=0.571
1278a	#20 net sample, vertical haul, Station D-6. 43°44'00"N; 87°38'00"W. Coll: C. F. Powers. 18 Sept. 1964. 44 spp. 26019 spec. H=1.388 R=0.633
1279a	#20 net sample, vertical haul, Station E-1. 44°37'30"N; 86°18'12"W. Coll: C. F. Powers. 16 Sept. 1964. 109 spp. 25467 spec. H=1.832 R=0.610
1280a	#20 net sample, vertical haul, Station E-2. 44°37'00"N; 86°21'42"W. Coll: C. F. Powers. 16 Sept. 1964. 42 spp. 14689 spec. H=1.558 R=0.583
1281a	#20 net sample, vertical haul, Station E-3. 44°34'00"N; 86°40'00"W. Coll: C. F. Powers. 16 Sept. 1964. 40 spp. 25483 spec. H=1.951 R=0.471
1282	#20 net sample, vertical haul, Station E-4. 44°30'18"N; 86°55'18"W. Coll: C. F. Powers. 16 Sept. 1964. 34 spp. 9025 spec. H=1.772 R=0.497
1283a	#20 net sample, vertical haul, Station E-5. 44°25'30"N; 87°10'18"W. Coll: C. F. Powers. 16 Sept. 1964. 38 spp. 16314 spec. H=2.064 R=0.432

1284a	#20 net sample, vertical haul, Station E-6. 44°27'48"N; 87°26'25"W. Coll: C. F. Powers. 17 Sept. 1964. 77 spp. 31473 spec. H=1.900 R=0.563
1285a	#20 net sample, vertical haul, Station F-1. 45°21'45"N; 85°19'45"W. Coll: C. F. Powers. 15 Sept. 1964. 151 spp. 17171 spec. H=2.374 R=0.527
1286a	#20 net sample, vertical haul, Station F-2. 45°28'30"N; 85°26'00"W. Coll: C. F. Powers. 15 Sept. 1964. 44 spp. 9136 spec. H=1.864 R=0.507
1287a	#20 net sample, vertical haul, Station F-3. 45°33'40"N; 85°30'45"W. Coll: C. F. Powers. 15 Sept. 1964. 48 spp. 19984 spec. H=1.821 R=0.530
1288a	#20 net sample, vertical haul, Station B-3. 42°24'00"N; 86°35'30"W. Coll: C. F. Powers. 15 Oct. 1964. 35 spp. 45938 spec. H=1.406 R=0.605
1289	#20 net sample, vertical haul. Station C-7. 42°47'30"N; 87°34'30"W. Coll: C. F. Powers. 14 Oct. 1964. 40 spp. 22741 spec. H=1.343 R=0.636
1290a	#20 net sample, vertical haul, Station C'-1. 43°08'00"N; 86°23'00"W. Coll: C. F. Powers. 16 Oct. 1964. 32 spp. 26385 spec. H=1.331 R=0.616
1291a	#20 net sample, vertical haul, Station C'-2. 43°12'00"N; 86°31'00"W. Coll: C. F. Powers. 16 Oct. 1964. 29 spp. 40878 spec. H=1.340 R=0.602
1292a	#20 net sample, vertical haul, Station D-1. 43°57'00"N; 86°33'00"W. Coll: C. F. Powers. 15 Oct. 1964. 30 spp. 26832 spec. H=1.381 R=0.594
1293a	#20 net sample, vertical haul, Station D-2. 43°56'00"N; 86°39'30"W. Coll: C. F. Powers. 15 Oct. 1964. 34 spp. 21202 spec. H=1.408 R=0.601
1294a	#20 net sample, vertical haul, Station D-3. 43°54'00"N; 86°51'30"W. Coll: C. F. Powers. 15 Oct. 1964. 37 spp. 30337 spec. H=1.564 R=0.567
1295	#20 net sample, vertical haul, Station D-4. 43°48'00"N; 87°03'00"W. Coll: C. F. Powers. 15 Oct. 1964. 33 spp. 16818 spec. H=1.605 R=0.541
1296	#20 net sample, vertical haul, Station D-5. 43°38'40"N; 87°31'00"W. Coll: C. F. Powers. 14 Oct. 1964. 31 spp. 25417 spec. H=1.306 R=0.620
1297a	#20 net sample, vertical haul, Station D-6. 43°44'00"N; 87°38'00"W. Coll: C. F. Powers. 14 Oct. 1964. 60 spp. 52522 spec. H=1.512 R=0.631

1298	#20 net sample, vertical haul, Station E-1. 44°37'30"N; 86°18'12"W. Coll: C. F. Powers. 12 Oct. 1964. 48 spp. 37136 spec. H=1.461 R=0.622
1299a	#20 net sample, vertical haul, Station E-2. 44°37'00"N; 86°21'42"W. Coll: C. F. Powers. 12 Oct. 1964. 50 spp. 31830 spec. H=1.677 R=0.571
1300	#20 net sample, vertical haul, Station E-3. 44°34'00"N; 86°40'00"W. Coll: C. F. Powers. 13 Oct. 1964. 61 spp. 27935 spec. H=2.000 R=0.513
1301a	#20 net sample, vertical haul, Station E-4. 44°30'18"N; 86°55'18"W. Coll: C. F. Powers. 13 Oct. 1964. 46 spp. 22646 spec. H=1.953 R=0.490
1302a	#20 net sample, vertical haul, Station E-5. 44°25'30"N; 87°10'18"W. Coll: C. F. Powers. 13 Oct. 1964. 61 spp. 24698 spec. H=2.049 R=0.502
1303	#20 net sample, vertical haul, Station E-6. 44°27'48"N; 87°26'25"W. Coll: C. F. Powers. 13 Oct. 1964. 54 spp. 17866 spec. H=2.097 R=0.474
1304a	#20 net sample, vertical haul, Station F-1. 45°21'45"N; 85°19'45"W. Coll: C. F. Powers. 11 Oct. 1964. 83 spp. 40492 spec. H=1.038 R=0.765
1305a	#20 net sample, vertical haul, Station F-2. 45°28'30"N; 85°26'00"W. Coll: C. F. Powers. 11 Oct. 1964. 74 spp. 57966 spec. H=0.870 R=0.798
1306a	#20 net sample, vertical haul, Station F-3. 45°33'40"N; 85°30'45"W. Coll: C. F. Powers. 11 Oct. 1964. 56 spp. 36078 spec. H=0.998 R=0.752
1307	#20 net sample, vertical haul, Station B-6. 42°22'30"N; 87°30'00"W. Coll: C. F. Powers. Probably Nov. 1964. 39 spp. 27716 spec. H=1.493 R=0.593
1308a	#20 net sample, vertical haul, Station C-7. 42°47'30"N; 87°34'30"W. Coll: C. F. Powers. 6 Nov. 1964. 42 spp. 32879 spec. H=1.366 R=0.635
1309a	#20 net sample, vertical haul, Station C'-1. 43°08'00"N; 86°23'00"W. Coll: C. F. Powers. 10 Nov. 1964. 35 spp. 62192 spec. H=1.202 R=0.662
1310	#20 net sample, vertical haul, Station C'-2. 43°12'00"N; 86°31'00"W. Coll: C. F. Powers. 10 Nov. 1964. 32 spp. 44100 spec. H=1.371 R=0.604
1311	#20 net sample, vertical haul, Station D-1. 43°57'00"N; 86°33'00"W. Coll: C. F. Powers. 8 Nov. 1964. 41 spp. 38762 spec. H=1.362 R=0.633



1312	#20 net sample, vertical haul, Station D-2. 43°56'00"N; 86°39'30"W. Coll: C. F. Powers. 8 Nov. 1964. 33 spp. 32215 spec. H=1.410 R=0.597
1313	#20 net sample, vertical haul, Station D-3. 43°54'00"N; 86°51'30"W. Coll: C. F. Powers. 9 Nov. 1964. 38 spp. 51800 spec. H=1.493 R=0.590
1314a	#20 net sample, vertical haul, Station D-4. 43°48'00"N; 87°03'00"W. Coll: C. F. Powers. 9 Nov. 1964. 31 spp. 34833 spec. H=1.482 R=0.568
1315	#20 net sample, vertical haul, Station D-5. 43°38'40"N; 87°31'00"W. Coll: C. F. Powers. 9 Nov. 1964. 33 spp. 21980 spec. H=1.404 R=0.598
1316	#20 net sample, vertical haul, Station D-6. 43°44'00"N; 87°38'00"W. Coll: C. F. Powers. 9 Nov. 1964. 48 spp. 26472 spec. H=1.608 R=0.585
1317	#20 net sample, vertical haul, Station E-1. 44°37'30"N; 86°18'12"W. Coll: C. F. Powers. 6 Nov. 1964. 48 spp. 52228 spec. H=1.394 R=0.640
1318a	#20 net sample, vertical haul, Station E-2. 44°37'00"N; 86°21'42"W. Coll: C. F. Powers. 7 Nov. 1964. 51 spp. 52563 spec. H=1.544 R=0.607
1319	#20 net sample, vertical haul, Station E-3. 44°34'00"N; 86°40'00"W. Coll: C. F. Powers. 7 Nov. 1964. 43 spp. 38193 spec. H=1.620 R=0.569
1320a	#20 net sample, vertical haul, Station E-4. 44°30'18"N; 86°55'18"W. Coll: C. F. Powers. 7 Nov. 1964. 63 spp. 48350 spec. H=1.646 R=0.603
1321	#20 net sample, vertical haul, Station E-5. 44°25'30"N; 87°10'18"W. Coll: C. F. Powers. 7 Nov. 1964. 50 spp. 31326 spec. H=1.616 R=0.587
1322a	#20 net sample, vertical haul, Station E-6. 44°27'48"N; 87°26'25"W. Coll: C. F. Powers. 7 Nov. 1964. 57 spp. 30007 spec. H=1.674 R=0.586
1323a	#20 net sample, vertical haul, Station F-1. 45°21'45"N; 85°19'45"W. Coll: C. F. Powers. 6 Nov. 1964. 56 spp. 71750 spec. H=1.152 R=0.714
1324	#20 net sample, vertical haul, Station F-2. 45°28'30"N; 85°26'00"W. Coll: C. F. Powers. 6 Nov. 1964. 49 spp. 42933 spec. H=1.192 R=0.694
1325a	#20 net sample, vertical haul, Station F-3. 45°33'40"N; 85°30'45"W. Coll: C. F. Powers. 6 Nov. 1964. 33 spp. 39699 spec. H=1.346 R=0.615
1331	Plankton, #20 net vertical haul. Sta. MIL-1D. Milwaukee, Wisconsin. Coll: J. Ayers. 21 July 1965.

- 1332 Vertical #20 net haul. Sta. MHKE-16. Milwaukee, Wisconsin. Lk. Mich.  
Coll: J. Ayers. 23 July 1965.
- 1333 Oblique #20 net haul. Sta. MIL-KE. Milwaukee, Wisconsin. Lk. Mich.  
Coll: J. Ayers. 24 July 1965.
- 1334 Oblique #20 net haul. Sta. MIL-35. Milwaukee, Wisconsin. Lk. Mich.  
Coll: J. Ayers. 27 July 1965.
- 1335 #20 net oblique haul. Sta. MH-29. Milwaukee, Wisconsin. Lk. Mich.  
Coll: J. Ayers. 28 July 1965.
- 1336 Vertical #20 net haul. Sta. C-3. 42°49'10"N; 86°28'25"W. Lake Mich.  
Coll: C. F. Powers. 27 Jan. 1967.  
41 spp. 51933 spec. H=0.893 R=0.759
- 1337 Vertical #20 net haul. Sta. C-3. 42°49'10"N; 86°28'25"W. Lake Mich.  
Coll: C. F. Powers. 2 March 1967.  
60 spp. 68039 spec. H=1.884 R=0.540
- 1338a Vertical #20 net haul. Sta. C-3. 42°49'10"N; 86°28'25"W. Lake Mich.  
Coll: C. F. Powers. 28 March 1967.  
58 spp. 75628 spec. H=2.002 R=0.507
- 1339 Vertical #20 net haul. Sta. C-5. 42°49'00"N; 86°50'00"W. Lake Mich.  
Coll: C. F. Powers. 28 March 1967.  
52 spp. 32074 spec. H=1.747 R=0.558
- 1340a Vertical #20 net haul. Sta. C-7. 42°47'30"N; 87°34'30"W. Lake Mich.  
Coll: C. F. Powers. 28 March 1967.  
67 spp. 137519 spec. H=1.793 R=0.574
- 1341a Vertical #20 net haul. Sta. A-3-A. 42°05'30"N; 86°43'00"W. Lake Mich.  
Coll: E. Dunster. 19 April 1967.  
102 spp. 92183 spec. H=1.700 R=0.632
- 1342 Vertical #20 net haul. Sta. A-4-A. 42°03'30"N; 87°06'30"W. Lake Mich.  
Coll: E. Dunster. 19 April 1967.  
72 spp. 55413 spec. H=1.930 R=0.549
- 1343 Vertical #20 net haul. Sta. A-6-A. 41°52'00"N; 87°27'00"W. Lake Mich.  
Coll: E. Dunster. 19 April 1967.  
77 spp. 143939 spec. H=1.409 R=0.676
- 1344a Vertical #20 net haul. Sta. C-3-E. 42°49'10"N; 86°28'25"W. Lake Mich.  
Coll: E. Dunster. 25 April 1967.  
48 spp. 60445 spec. H=1.324 R=0.658
- 1345a Vertical #20 net haul. Sta. C-5-E. 42°49'00"N; 86°50'00"W. Lake Mich.  
Coll: E. Dunster. 25 April 1967.  
60 spp. 51303 spec. H=2.073 R=0.494
- 1346a Vertical #20 net haul. Sta. C-7-E. 42°47'30"N; 87°34'30"W. Lake Mich.  
Coll: E. Dunster. 21 April 1967.  
76 spp. 74893 spec. H=1.471 R=0.660

- 1347a Vertical #20 net haul. Sta. E-2-E. 44°37'00"N; 86°21'40"W. Lake Mich.  
Coll: E. Dunster. 23 April 1967.  
53 spp. 61505 spec. H=1.760 R=0.557
- 1348a Vertical #20 net haul. Sta. E-5-E. 44°25'30"N; 87°10'18"W. Lake Mich.  
Coll: E. Dunster. 23 April 1967.  
72 spp. 72950 spec. H=1.758 R=0.589
- 1349 Vertical #20 net haul. Off Chicago--Pierhead, Illinois. CI: 41°53.3'N;  
87°35.4'W. Lake Mich. Coll: E. Dunster. 19 April 1967.  
70 spp. 27838 spec. H=1.752 R=0.588
- 1350a Surface #20 net tow. Benton Harobr, Michigan. BH: 42°06.9'N; 86°29.7'W.  
Lake Mich. Coll: E. Dunster. 19 April 1967.  
237 spp. 45401 spec. H=2.572 R=0.530
- 1351 Surface #20 net tow. Milwaukee entrance, Wisconsin. MI: 43°01.6'N;  
87°52.9'W. Lake Mich. Coll: E. Dunster. 21 April 1967.  
72 spp. 32225 spec. H=2.123 R=0.504
- 1352 Surface #20 net tow. Kewaunee Harbor entrance, Wisconsin KW: 44°27.5'N;  
87°29.6'W. Lake Mich. Coll: E. Dunster. 21 April 1967.  
80 spp. 11642 spec. H=2.635 R=0.399
- 1353 Surface #20 net tow. Frankfort---off piers, Michigan. FR: 44°37.8'N;  
86°15.0'W. Lake Mich. Coll: E. Dunster. 23 April 1967.  
49 spp. 9480 spec. H=1.876 R=0.518
- 1354 Surface #20 net tow. Outside, Grand Haven pierheads, Michigan. GH:  
43°03.5'N; 86°15.4'W. Lake Mich. Coll: E. Dunster. 25 April 1967.  
133 spp. 57942 spec. H=1.693 R=0.654
- 1355 Vertical #20 net tow. Sta. #1, off Grand Haven. 43°08.6'N; 86°19.6'W.  
Lake Mich. Coll: V. E. Noble. 28 April 1967.
- 1356 Vertical #20 net tow. Sta. #2, off Grand Haven. 43°08.6'N; 86°19.8'W.  
Lake Mich. Coll: V. E. Noble. 28 April 1967.
- 1357 Vertical #20 net tow. Sta. #3, off Grand Haven. 43°03.8'N; 86°20.0'W.  
Lake Mich. Coll: V. E. Noble. 28 April 1967.
- 1358 Vertical #20 net tow. Sta. #4, off Grand Haven. 43°03.8'N; 86°19.5'W.  
Lake Mich. Coll: V. E. Noble. 29 April 1967.
- 1359 Vertical #20 net tow. Sta. #5, off Grand Haven. 43°03.7'N; 86°18.9'W.  
Lake Mich. Coll: V. E. Noble. 29 April 1967.
- 1360 Vertical #20 net tow. Sta. #6, off Grand Haven. 43°03.7'N; 86°15.9'W.  
Lake Mich. Coll: V. E. Noble. 29 April 1967.
- 1361 Vertical #20 net tow. Sta. #7, off Grand Haven. 43°01.9'N; 86°16.6'W.  
Lake Mich. Coll: V. E. Noble. 30 April 1967.
- 1362 Vertical #20 net tow. Sta. #8, off Grand Haven. 43°02.1'N; 86°16.3'W.  
Lake Mich. Coll: V. E. Noble. 30 April 1967.

- 1363 Vertical #20 net tow. Sta. #9, off Grand Haven. 43°02.6'N; 86°16.0'W. Lake Mich. Coll: V. E. Noble. 30 April 1967.
- 1364 Vertical #20 net tow. Sta. #10, off Grand Haven. 43°02.6'N; 86°15.4'W. Lake Mich. Coll: V. E. Noble. 30 April 1967.
- 1365 Vertical #20 net tow. Sta. #11, off Grand Haven. 43°02.5'N; 86°18.0'W. Lake Mich. Coll: V. E. Noble. 30 April 1967.
- 1366 Vertical #20 net tow. Inside Grand Haven Piers -A, Mich. Lake Mich. Coll: V. E. Noble. 29 April 1967.
- 1367 Vertical #20 net tow. Inside Grand Haven Piers -B, Mich. Lake Mich. Coll: V. E. Noble. 29 April 1967.
- 1368a Vertical #20 net haul. Sta. A-3-E. 42°05'30"N; 86°43'00"W. Lake Mich. Coll: E. F. Stoermer. 4 May 1967.  
48 spp. 31830 spec. H=1.731 R=0.553
- 1369 Vertical #20 net haul. Sta. A-4-E. 42°03'30"N; 87°06'30"W. Lake Mich. Coll: E. F. Stoermer. 4 May 1967.  
46 spp. 26829 spec. H=1.103 R=0.712
- 1370 Vertical #20 net haul. Sta. A-6-E. 41°52'00"N; 87°27'00"W. Lake Mich. Coll: E. F. Stoermer. 3 May 1967.  
53 spp. 43445 spec. H=1.349 R=0.660
- 1371a Vertical #20 net haul. Sta. C-3-E. 42°49'10"N; 86°28'25"W. Lake Mich. Coll: E. F. Stoermer. 4 May 1967.  
40 spp. 43318 spec. H=1.236 R=0.665
- 1372a Vertical #20 net haul. Sta. C-5-E. 42°49'00"N; 86°50'00"W. Lake Mich. Coll: E. F. Stoermer. 5 May 1967.  
45 spp. 28196 spec. H=1.458 R=0.617
- 1373 Vertical #20 net haul. Sta. C-7-E. 42°47'30"N; 87°34'30"W. Lake Mich. Coll: E. F. Stoermer. 5 May 1967.  
40 spp. 35058 spec. H=1.011 R=0.726
- 1374 Vertical #20 net haul. Sta. E-2-E. 44°37'00"N; 86°21'42"W. Lake Mich. Coll: E. F. Stoermer. 7 May 1967.  
59 spp. 33460 spec. H=1.676 R=0.589
- 1375a Vertical #20 net haul. Sta. E-3-E. 44°34'00"N; 86°40'00"W. Lake Mich. Coll: E. F. Stoermer. 7 May 1967.  
57 spp. 41559 spec. H=1.418 R=0.649
- 1376 Vertical #20 net haul. Sta. E-5-E. 44°25'30"N; 87°10'18"W. Lake Mich. Coll: E. F. Stoermer. 6 May 1967.  
55 spp. 35576 spec. H=1.764 R=0.560
- 1377a Vertical #20 net haul. Sta. GS-67-1. 44°46.9'N; 86°13.7'W. Lake Mich. Coll: E. F. Stoermer. 9 May 1967.  
39 spp. 25265 spec. H=1.462 R=0.601

- 1378 Vertical #20 net haul. Sta. GS-67-2. 45°00.6N; 85°56.5W. Lake Mich.  
Coll: E. F. Stoermer. 9 May 1967.  
34 spp. 23781 spec. H=1.693 R=0.520
- 1379 Vertical #20 net haul. Sta. GS-67-3. 45°04.4N; 85°26.6W. Lake Mich.  
Coll: E. F. Stoermer. 9 May 1967.  
54 spp. 32312 spec. H=1.748 R=0.562
- 1380a Vertical #20 net haul. Sta. GS-67-4. 45°25.2N; 85°19.0W. Lake Mich.  
Coll: E. F. Stoermer. 9 May 1967.  
63 spp. 59470 spec. H=1.872 R=0.548
- 1381a Vertical #20 net haul. Sta. GS-67-5. 45°30.5N; 85°23.5W. Lake Mich.  
Coll: E. F. Stoermer. 10 May 1967.  
55 spp. 41926 spec. H=1.783 R=0.555
- 1382 Vertical #20 net haul. Sta. GS-67-6. 45°33.0N; 85°34.5W. Lake Mich.  
Coll: E. F. Stoermer. 10 May 1967.  
64 spp. 36026 spec. H=1.553 R=0.626
- 1383 Vertical #20 net haul. Sta. GS-67-7. 45°34.5N; 85°41.2W. Lake Mich.  
Coll: E. F. Stoermer. 10 May 1967.  
61 spp. 37408 spec. H=1.855 R=0.549
- 1384 Vertical #20 net haul. Sta. GS-67-8. 45°44.7N; 85°46.5W. Lake Mich.  
Coll: E. F. Stoermer. 10 May 1967.  
67 spp. 54095 spec. H=1.651 R=0.607
- 1385 Vertical #20 net haul. Sta. GS-67-9. 45°54.6N; 86°11.5W. Lake Mich.  
Coll: E. F. Stoermer. 10 May 1967.  
50 spp. 42471 spec. H=1.660 R=0.576
- 1386 Vertical #20 net haul. Sta. GS-67-10. 45°34.0N; 86°25.7W. Lake Mich.  
Coll: E. F. Stoermer. 12 May 1967.  
62 spp. 34810 spec. H=1.614 R=0.609
- 1387 Vertical #20 net haul. Sta. GS-67-11. 45°31.7N; 86°41.4W. Lake Mich.  
Coll: E. F. Stoermer. 12 May 1967.  
106 spp. 26248 spec. H=2.075 R=0.555
- 1388 Vertical #20 net haul. Sta. GS-67-12. 45°47.1N; 86°36.1W. Lake Mich.  
Coll: E. F. Stoermer. 12 May 1967.  
126 spp. 16575 spec. H=2.212 R=0.543
- 1389 Vertical #20 net haul. Sta. GS-67-13. 45°43.8N; 86°41.6W. Lake Mich.  
Coll: E. F. Stoermer. 12 May 1967.  
103 spp. 38783 spec. H=1.644 R=0.645
- 1390 Vertical #20 net haul. Sta. GS-67-14. 45°40.5N; 86°48.8W. Lake Mich.  
Coll: E. F. Stoermer. 12 May 1967.  
78 spp. 17030 spec. H=1.823 R=0.582
- 1391 Vertical #20 net haul. Sta. GS-67-15. 45°36.2N; 86°58.5 W. Lake Mich.  
Coll: E. F. Stoermer. 12 May 1967.  
66 spp. 20883 spec. H=2.091 R=0.501

- 1392 Vertical #20 net haul. Sta. GS-67-16. 45°47.4N; 87°02.2W. Lake Mich.  
Coll: E. F. Stoermer. 12 May 1967.  
93 spp. 32447 spec. H=2.114 R=0.534
- 1393 Vertical #20 net haul. Sta. GS-67-17. 45°34.0N; 87°09.0W. Lake Mich.  
Coll: E. F. Stoermer. 13 May 1967.  
71 spp. 36504 spec. H=2.077 R=0.513
- 1394a Vertical #20 net haul. Sta. GS-67-18. 45°23.5N; 87°17.5W. Lake Mich.  
Coll: E. F. Stoermer. 13 May 1967.  
108 spp. 58134 spec. H=1.955 R=0.583
- 1395 Vertical #20 net haul. Sta. GS-67-19. 45°05.0N; 87°32.3W. Lake Mich.  
Coll: E. F. Stoermer. 13 May 1967.  
82 spp. 85154 spec. H=1.423 R=0.677
- 1396 Vertical #20 net haul. Sta. GS-67-20. 44°40.2N; 87°52.8W. Lake Mich.  
Coll: E. F. Stoermer. 13 May 1967.  
78 spp. 135155 spec. H=1.359 R=0.688
- 1397 Vertical #20 net haul. Sta. GS-67-21. 44°54.7N; 87°25.8W. Lake Mich.  
Coll: E. F. Stoermer. 13 May 1967.  
70 spp. 152893 spec. H=1.296 R=0.695
- 1398 Vertical #20 net haul. Sta. GS-67-22. 44°46.6N; 87°17.4W. Lake Mich.  
Coll: E. F. Stoermer. 14 May 1967.  
77 spp. 32937 spec. H=1.873 R=0.569
- 1399a Surface #20 net tow. Harbor entrance, Port Washington, Wisconsin.  
PW: 43°23.2'N; 87°51.7'W. Coll: E. F. Stoermer. 5 May 1967.  
64 spp. 14704 spec. H=2.041 R=0.509
- 1400a Surface #20 net tow. Harbor entrance, Sheboygan, Wisconsin, Lake Mich.  
SB: 43°45.0'N; 87°41.5'W. Coll: E. F. Stoermer. 6 May 1967.  
96 spp. 16788 spec. H=2.297 R=0.497
- 1401 Surface #20 net tow. Harbor entrance, Manitowoc, Wisconsin, Lake Mich.  
MO: 44°05.6'N; 87°38.6'W. Coll: E. F. Stoermer. 6 May 1967.  
101 spp. 17008 spec. H=2.029 R=0.560
- 1402 Surface #20 net tow. Harbor entrance, Two Rivers, Wisconsin, Lake Mich.  
TR: 44°08.6'N; 87°33.6'W. Coll: E. F. Stoermer. 6 May 1967.  
108 spp. 18468 spec. H=2.055 R=0.561
- 1403 Surface #20 net tow. Harbor entrance, Charlevoix, Michigan, Lake Mich.  
CA: 45°19.3'N; 85°15.9'W. Coll: E. F. Stoermer. 10 May 1967.  
123 spp. 7653 spec. H=2.859 R=0.406
- 1404 Surface #20 net tow. Harbor entrance, Manistique, Michigan, Lake Mich.  
MQ: 45°56.7'N; 86°14.8'W. Coll: E. F. Stoermer. 10 May 1967.  
163 spp. 7872 spec. H=2.327 R=0.543
- 1405 Surface #20 net tow. Harbor entrance, Escanaba, Michigan, Lake Mich.  
ES: 45°44.7'N; 87°02.2'W. Coll: E. F. Stoermer. 12 May 1967.  
92 spp. 15504 spec. H=1.534 R=0.661

- 1406a Surface #20 net tow. Harbor entrance, Green Bay, Wisconsin, Lake Mich.  
GB: 44°39.2'N; 87°54.1'W. Coll: E. F. Stoermer. 13 May 1967.  
75 spp. 37095 spec. H=0.513 R=0.881
- 1407 Surface #20 net tow. Harbor entrance, Sturgeon Bay, Wisconsin, Lake Mich.  
SM: 44°47.5'N; 87°18.6'W. Coll: E. F. Stoermer. 14 May 1967.  
116 spp. 16747 spec. H=2.393 R=0.497
- 1408a Vertical #20 net tow. Sta. A-3-E. 42°05'30"N; 86°43'00"W. Lake Mich.  
Coll: E. Dunster. 23 May 1967.  
48 spp. 22363 spec. H=1.694 R=0.562
- 1409a Vertical #20 net tow. Sta. A-4-E. 42°03'30"N; 87°06'30"W. Lake Mich.  
Coll: E. Dunster. 23 May 1967.  
32 spp. 33606 spec. H=1.553 R=0.556
- 1410a Vertical #20 net haul. Sta. A-6-E. 41°52'00"N; 87°27'00"W. Lake Mich.  
Coll: E. Dunster. 24 May 1967.  
48 spp. 17736 spec. H=1.555 R=0.598
- 1411a Vertical #20 net haul. Sta. C-3-E. 42°49'10"N; 86°28'25"W. Lake Mich.  
Coll: E. Dunster. 31 May 1967.  
48 spp. 24373 spec. H=1.558 R=0.597
- 1412a Vertical #20 net haul. Sta. C-5-E. 42°49'00"N; 86°50'00"W. Lake Mich.  
Coll: E. Dunster. 31 May 1967.  
44 spp. 23758 spec. H=1.480 R=0.609
- 1413a Vertical #20 net haul. Sta. C-7-E. 42°47'30"N; 87°34'30"W. Lake Mich.  
Coll: E. Dunster. 25 May 1967.  
37 spp. 31657 spec. H=1.185 R=0.672
- 1414a Vertical #20 net haul. Sta. E-2-E. 44°37'00"N; 86°21'42"W. Lake Mich.  
Coll: E. Dunster. 28 May 1967.  
37 spp. 29775 spec. H=1.363 R=0.623
- 1415 Vertical #20 net haul. Sta. E-3-E. 44°34'00"N; 86°40'00"W. Lake Mich.  
Coll: E. Dunster. 28 May 1967.  
38 spp. 44474 spec. H=1.244 R=0.658
- 1416 Vertical #20 net haul. Sta. E-5-E. 44°25'30"N; 87°10'18"W. Lake Mich.  
Coll: E. Dunster. 28 May 1967.  
58 spp. 45729 spec. H=1.472 R=0.637
- 1417 Surface #20 net tow. Harbor entrance, Holland, Michigan, Lake Mich.  
HO: 42°46.4'N; 86°12.9'W. Coll: E. Dunster. 22 May 1967.  
138 spp. 26748 spec. H=2.574 R=0.478
- 1418a Surface #20 net tow. Harbor entrance, South Haven, Michigan, Lake Mich.  
SH: 42°24.0'N; 86°17.3'W. Coll: E. Dunster. 22 May 1967.  
50 spp. 6430 spec. H=1.829 R=0.532
- 1419a Surface #20 net tow. Harbor entrance, Buffington, Indiana, Lake Mich.  
BU: 41°38.8'N; 87°24.6'W. Coll: E. Dunster. 23 May 1967.  
42 spp. 5462 spec. H=2.098 R=0.439

- 1420 Surface #20 net tow. Harbor entrance, Indiana Harbor, Indiana, Lake Mich. IH: 41°40.9'N; 87°26.5'W. Coll: E. Dunster. 23 May 1967.  
40 spp. 6620 spec. H=1.938 R=0.475
- 1421a Surface #20 net tow. Harbor entrance, Calumet Harbor, Indiana, Lake Mich. CH: 41°43.5'N; 87°29.6'W. Coll: E. Dunster. 23 May 1967.  
48 spp. 5764 spec. H=2.011 R=0.480
- 1422a Surface #20 net tow. Harbor entrance, Gary, Indiana, Lake Mich. GA: 41°37.5'N; 87°19.4'W. Coll: E. Dunster. 23 May 1967.  
69 spp. 19573 spec. H=2.037 R=0.519
- 1423 Surface #20 net tow. Harbor entrance, Waukegan, Illinois, Lake Mich. WA: 42°21.7'N; 87°48.8'W. Coll: E. Dunster. 25 May 1967.  
80 spp. 23353 spec. H=2.195 R=0.499
- 1424a Surface #20 net tow. Harbor entrance, Kenosha, Wisconsin, Lake Mich. KN: 42°35.7'N; 87°48.5'W. Coll: E. Dunster. 25 May 1967.  
42 spp. 7506 spec. H=2.214 R=0.408
- 1425 Surface #20 net tow. Harbor entrance, Racine, Wisconsin, Lake Mich. RA: 42°44.1'N; 87°46.3'W. Coll: E. Dunster. 25 May 1967.  
41 spp. 11311 spec. H=2.111 R=0.432
- 1426 Surface #20 net tow. Harbor entrance, Manistee, Michigan, Lake Mich. MS: 44°15.1'N; 86°20.8'W. Coll: E. Dunster. 29 May 1967.  
135 spp. 9525 spec. H=2.896 R=0.410
- 1427 Surface #20 net tow. Harbor entrance, Ludington, Michigan, Lake Mich. LU: 43°57.2'N; 86°27.8'W. Coll: E. Dunster. 29 May 1967.  
96 spp. 8260 spec. H=2.726 R=0.403
- 1428a Surface #20 net tow. Harbor entrance, Muskegon, Michigan, Lake Mich. MU: 43°13.5'N; 86°20.8'W. Coll: E. Dunster. 29 May 1967.  
96 spp. 33189 spec. H=1.346 R=0.705
- 1429a Surface #20 net tow. Harbor entrance, White Lake, Michigan, Lake Mich. WL: 43°22.5'N; 86°25.3'W. Coll: E. Dunster. 29 May 1967.  
75 spp. 9421 spec. H=2.399 R=0.444
- 1430a Surface #20 net tow. Michigan City, Indiana, Lake Mich. MC: 41°43.7'N; 87°54.7'W. Coll: J. Ayers. 12 June 1967.  
18 spp. 4053 spec. H=0.969 R=0.665
- 1431 Vertical #20 net tow. Sta. A-3-E. 42°05'30"N; 86°43'00"W. Lake Mich. Coll: J. Ayers. 12 June 1967.  
44 spp. 38837 spec. H=1.760 R=0.535
- 1432 Vertical #20 net tow. Sta. A-4-E. 42°03'30"N; 87°06'30"W. Lake Mich. Coll: J. Ayers. 13 June 1967.  
55 spp. 39148 spec. H=1.876 R=0.532
- 1433 Vertical #20 net tow. Sta. C-3-E. 42°49'10"N; 86°28'25"W. Lake Mich. Coll: J. Ayers. 17 June 1967.  
48 spp. 15482 spec. H=2.321 R=0.400



1434	Vertical #20 net tow. Sta. C-5-E. 42°49'00"N; 86°50'00"W. Lake Mich. Coll: J. Ayers. 17 June 1967. 45 spp. 33436 spec. H=1.453 R=0.618
1435	Vertical #20 net tow. Sta. C-7-E. 42°47'30"N; 87°34'30"W. Lake Mich. Coll: J. Ayers. 13 June 1967. 46 spp. 31673 spec. H=1.695 R=0.557
1436	Vertical #20 net tow. Sta. E-2-E. 44°37'00"N; 86°21'42"W. Lake Mich. Coll: J. Ayers. 15 June 1967. 42 spp. 27636 spec. H=1.894 R=0.493
1437	Vertical #20 net tow. Sta. E-3-E. 44°34'00"N; 86°40'00"W. Lake Mich. Coll: J. Ayers. 15 June 1967. 31 spp. 37153 spec. H=1.293 R=0.623
1438	Vertical #20 net tow. Sta. E-5-E. 44°25'30"N; 87°10'18"W. Lake Mich. Coll: J. Ayers. 14 June 1967. 38 spp. 27540 spec. H=1.307 R=0.641
1439a	Vertical #20 net tow. Sta. B-6. 42°22'30"N; 87°30'00"W. Lake Mich. Coll: C. F. Powers. 5 June 1964. 52 spp. 50050 spec. H=1.787 R=0.548
1440a	Vertical #20 net tow. Sta. B-6. 42°22'30"N; 87°30'00"W. Lake Mich. Coll: C. F. Powers. 11 July 1964. 46 spp. 27137 spec. H=2.152 R=0.438
1441a	Vertical #20 net tow. Sta. B-6. 42°22'30"N; 87°30'00"W. Lake Mich. Coll: C. F. Powers. 24 July 1964. 41 spp. 45399 spec. H=1.842 R=0.504
1442a	Vertical #20 net tow. Sta. B-6. 42°22'30"N; 87°30'00"W. Lake Mich. Coll: C. F. Powers. 2 Aug. 1964. 32 spp. 29310 spec. H=1.895 R=0.453
1443	Vertical #20 net tow. Sta. B-6. 42°22'30"N; 87°30'00"W. Lake Mich. Coll: C. F. Powers. 16 Aug. 1964. 23 spp. 50586 spec. H=1.361 R=0.566
1444a	Vertical #20 net tow. Sta. B-6. 42°22'30"N; 87°30'00"W. Lake Mich. Coll: C. F. Powers. 19 Sept. 1964. 27 spp. 32989 spec. H=1.523 R=0.538
1445a	Vertical #20 net tow. Sta. B-6. 42°22'30"N; 87°30'00"W. Lake Mich. Coll: C. F. Powers. 14 Oct. 1964. 40 spp. 30660 spec. H=1.500 R=0.593
1446a	Vertical #20 net tow. Sta. A-3. 42°05'30"N; 86°43'00"W. Lake Mich. Coll: E. Dunster. 11 July 1967. 45 spp. 40882 spec. H=2.143 R=0.437
1447a	Vertical #20 net tow. Sta. A-4. 42°03'30"N; 87°06'30"W. Lake Mich. Coll: E. Dunster. 11 July 1967. 35 spp. 42752 spec. H=2.284 R=0.358

1448a	Vertical #20 net tow. Sta. A-6. Coll: E. Dunster. 10 July 1967. 32 spp. 28275 spec.	41°52'00"N; 87°27'00"W. Lake Mich. H=1.311 R=0.622
1449a	Vertical #20 net tow. Sta. C-3. Coll: E. Dunster. 16 July 1967. 64 spp. 26169 spec.	42°49'10"N; 86°28'25"W. Lake Mich. H=2.568 R=0.383
1450a	Vertical #20 net tow. Sta. C-5. Coll: E. Dunster. 16 July 1967. 49 spp. 52515 spec.	42°49'00"N; 86°50'00"W. Lake Mich. H=2.278 R=0.415
1451a	Vertical #20 net tow. Sta. C-7. Coll: E. Dunster. 16 July 1967. 52 spp. 50802 spec.	42°47'30"N; 87°34'30"W. Lake Mich. H=2.193 R=0.445
1452a	Vertical #20 net tow. Sta. E-2. Coll: E. Dunster. 14 July 1967. 68 spp. 46974 spec.	44°37'00"N; 86°21'42"W. Lake Mich. H=2.464 R=0.416
1453a	Vertical #20 net tow. Sta. E-3. Coll: E. Dunster. 15 July 1967. 47 spp. 39563 spec.	44°34'00"N; 86°40'00"W. Lake Mich. H=1.843 R=0.521
1454a	Vertical #20 net tow. Sta. E-5. Coll: E. Dunster. 15 July 1967. 46 spp. 49990 spec.	44°25'30"N; 87°10'18"W. Lake Mich. H=1.858 R=0.515
1455	Surface #20 net tow. CH-1, Chicago, Illinois, Lake Mich. Coll: E. Dunster. 10 July 1967.	
1504a	Vertical #20 net tow. Sta. A-3. Coll: E. Dunster. 28 Aug. 1967. 45 spp. 40505 spec.	42°05'30"N; 86°43'00"W. Lake Mich. H=1.404 R=0.631
1505	Vertical #20 net tow. Sta. A-4. Coll: E. Dunster. 28 Aug. 1967. 19 spp. 19406 spec.	42°03'30"N; 87°06'30"W. Lake Mich. H=1.484 R=0.496
1506	Vertical #20 net tow. Sta. A-6. Coll: E. Dunster. 29 Aug. 1967. 17 spp. 19117 spec.	41°52'00"N; 87°27'00"W. Lake Mich. H=1.123 R=0.603
1508	Vertical #20 net tow. Sta. C-3. Coll: E. Dunster. 2 Sept. 1967. 23 spp. 25022 spec.	42°49'10"N; 86°28'25"W. Lake Mich. H=1.530 R=0.512
1509	Vertical #20 net tow. Sta. C-5. Coll: E. Dunster. 2 Sept. 1967. 30 spp. 19814 spec.	42°49'00"N; 86°40'00"W. Lake Mich. H=2.066 R=0.393
1510	Vertical #20 net tow. Sta. C-7. Coll: E. Dunster. 29 Aug. 1967. 25 spp. 31630 spec.	42°47'30"N; 87°34'30"W. Lake Mich. H=1.375 R=0.573

1511	Vertical #20 net tow. Sta. E-2. 44°37'00"N; 86°21'42"W. Lake Mich. Coll: E. Dunster. 1 Sept. 1967. 59 spp. 32577 spec. H=2.351 R=0.423
1512	Vertical #20 net tow. Sta. E-3. 44°34'00"N; 86°40'00"W. Lake Mich. Coll: E. Dunster. 1 Sept. 1967. 59 spp. 25468 spec. H=2.396 R=0.412
1513	Vertical #20 net tow. Sta. E-5. 44°25'30"N; 87°10'18"W. Lake Mich. Coll: E. Dunster. 31 Aug. 1967. 33 spp. 19734 spec. H=1.813 R=0.482
1520	Surface #20 net tow. Holland, Michigan, Lake Mich. HO: 42°46.4'N; 86°12.9'W. Coll: J. Ayers. 18 Sept. 1967. 76 spp. 21209 spec. H=1.917 R=0.557
1521	Surface #20 net tow. South Haven, Michigan, Lake Mich. SH: 42°24.0'N; 86°17.3'W. Coll: J. Ayers. 18 Sept. 1967. 89 spp. 17332 spec. H=1.451 R=0.677
1522	Surface #20 net tow. Benton Harbor, Michigan, Lake Mich. BH: 42°06.9'N; 86°29.7'W. Coll: J. Ayers. 18 Sept. 1967. 102 spp. 54841 spec. H=1.452 R=0.686
1523a	Surface #20 net tow. Racine, Wisconsin, Lake Mich. RA: 42°44.1'N; 87°46.3'W. Coll: J. Ayers. 19 Sept. 1967. 54 spp. 10840 spec. H=1.653 R=0.586
1524	Surface #20 net tow. Milwaukee, Wisconsin, Lake Mich. MI: 43°01.6'N; 87°52.9'W. Coll: J. Ayers. 20 Sept. 1967. 38 spp. 4568 spec. H=1.595 R=0.561
1525a	Surface #20 net tow. Port Washington, Wisconsin, Lake Mich. PW: 43° 23.2'N; 87°51.7'W. Coll: J. Ayers. 20 Sept. 1967. 27 spp. 7181 spec. H=1.426 R=0.567
1526	Surface #20 net tow. Manitowoc, Wisconsin, Lake Mich. MO: 44°05.6'N; 87°38.6'W. Coll: J. Ayers. 20 Sept. 1967. 121 spp. 17577 spec. H=2.230 R=0.535
1527	Surface #20 net tow. Two Rivers, Wisconsin, Lake Mich. TR: 44°08.6'N; 87°33.6'W. Coll: J. Ayers. 20 Sept. 1967. 135 spp. 15900 spec. H=1.820 R=0.629
1528a	Surface #20 net tow. Sheboygan, Wisconsin, Lake Mich. SB: 43°45.0'N; 87°41.5'W. Coll: J. Ayers. 20 Sept. 1967. 65 spp. 6926 spec. H=2.057 R=0.507
1529	Surface #20 net tow. Kewaunee, Wisconsin, Lake Mich. KW: 44°27.5'N; 87°29.6'W. Coll: J. Ayers. 20 Sept. 1967. 95 spp. 8339 spec. H=2.389 R=0.475
1530a	Surface #20 net tow. Frankfort, Michigan, Lake Mich. FR: 44°37.8'N; 86°15.0'W. Coll: J. Ayers. 24 Sept. 1967. 94 spp. 9999 spec. H=1.856 R=0.591

1531	Surface #20 net tow. Grand Haven, Michigan, Lake Mich. GH: 43°03.5'N; 86°15.4'W. Coll: J. Ayers. 25 Sept. 1967. 70 spp. 11830 spec. H=1.762 R=0.585
1532	Vertical #20 net tow. Sta. A-3. 42°05'30"N; 86°43'00"W. Lake Mich. Coll: J. Ayers. 18 Sept. 1967. 49 spp. 30441 spec. H=1.380 R=0.645
1533	Vertical #20 net tow. Sta. A-4. 42°03'30"N; 87°06'30"W. Lake Mich. Coll: J. Ayers. 19 Sept. 1967. 49 spp. 21542 spec. H=1.362 R=0.650
1534	Vertical #20 net tow. Sta. A-6. 41°52'00"N; 87°27'00"W. Lake Mich. Coll: J. Ayers. 19 Sept. 1967. 39 spp. 32233 spec. H=1.433 R=0.609
1535	Vertical #20 net tow. Sta. C-7. 42°47'30"N; 87°34'30"W. Lake Mich. Coll: J. Ayers. 20 Sept. 1967. 32 spp. 31067 spec. H=1.109 R=0.680
1536	Vertical #20 net tow. Sta. E-2. 44°37'00"N; 86°21'42"W. Lake Mich. Coll: J. Ayers. 24 Sept. 1967. 85 spp. 36674 spec. H=2.199 R=0.505
1537a	Vertical #20 net tow. Sta. E-3. 44°34'00"N; 86°40'00"W. Lake Mich. Coll: J. Ayers. 24 Sept. 1967. 63 spp. 23186 spec. H=2.575 R=0.378
1538a	Vertical #20 net tow. Sta. E-5. 44°25'30"N; 87°10'18"W. Lake Mich. Coll: J. Ayers. 23 Sept. 1967. 70 spp. 18103 spec. H=2.003 R=0.529
1539a	Vertical #20 net tow. Sta. C-3. 42°49'10"N; 86°28'25"W. Lake Mich. Coll: C. F. Powers. 4 Oct. 1967. 31 spp. 19874 spec. H=1.462 R=0.574
1540	Vertical #20 net tow. Sta. C-5. 42°49'00"N; 86°50'00"W. Lake Mich. Coll: C. F. Powers. 4 Oct. 1967. 41 spp. 20147 spec. H=1.401 R=0.623
1541a	Vertical #20 net tow. Sta. E-2. 44°37'00"N; 86°21'42"W. Lake Mich. Coll: E. F. Stoermer. 11 Oct. 1967. 85 spp. 18791 spec. H=1.854 R=0.583
1542	Vertical #20 net tow. Sta. E-3. 44°34'00"N; 86°40'00"W. Lake Mich. Coll: E. F. Stoermer. 11 Oct. 1967. 72 spp. 19664 spec. H=2.417 R=0.435
1543	Vertical #20 net tow. Sta. E-5. 44°25'30"N; 87°10'18"W. Lake Mich. Coll: E. F. Stoermer. 10 Oct. 1967. 52 spp. 13922 spec. H=1.460 R=0.631
1544	Surface #20 net tow. Muskegon, Michigan, Lake Mich. MU: 43°13.5'N; 86°20.8'W. Coll: E. F. Stoermer. 2 Oct. 1967. 111 spp. 41967 spec. H=0.821 R=0.826

- 1545 Surface #20 net tow. White Lake, Michigan, Lake Mich. WL: 43°22.5'N;  
86°25.3'W. Coll: E. F. Stoermer. 2 Oct. 1967.  
159 spp. 14799 spec. H=2.579 R=0.491
- 1546 Surface #20 net tow. Ludington, Michigan, Lake Mich. LU: 43°57.2'N;  
86°27.8'W. Coll: E. F. Stoermer. 2 Oct. 1967.  
129 spp. 19993 spec. H=1.155 R=0.762
- 1547 Surface #20 net tow. Manistee, Michigan, Lake Mich. MS: 44°15.1'N;  
86°20.8'W. Coll: E. F. Stoermer. 2 Oct. 1967.  
71 spp. 12525 spec. H=1.339 R=0.686
- 1548 Surface #20 net tow. Charlevoix, Michigan, Lake Mich. CA: 45°19.3'N;  
85°15.9'W. Coll: E. F. Stoermer. 3 Oct. 1967.  
50 spp. 7861 spec. H=1.328 R=0.661
- 1549 Surface #20 net tow. Manistique, Michigan, Lake Mich. MQ: 45°56.7'N;  
86°14.8'W. Coll: E. F. Stoermer. 4 Oct. 1967.  
85 spp. 7297 spec. H=2.287 R=0.485
- 1550 Surface #20 net tow. Marinette, Wisconsin and Menominee, Michigan.  
Green Bay. MR: 45°05.8'N; 87°35.1'W. Coll: E. F. Stoermer. 5 Oct. 1967.  
233 spp. 8071 spec. H=3.574 R=0.344
- 1551 Surface #20 net tow. Escanaba, Michigan, Little Bay De Noc. ES: 45°  
44.7'N; 87°02.2'W. Coll: E. F. Stoermer. 5 Oct. 1967.  
77 spp. 12519 spec. H=1.980 R=0.544
- 1552 Surface #20 net tow. Sturgeon Bay, Wisconsin, Lake Mich. SM: 44°  
47.5'N; 87°18.6'W. Coll: E. F. Stoermer. 6 Oct. 1967.  
88 spp. 15145 spec. H=1.850 R=0.587
- 1553 Surface #20 net tow. Sturgeon Bay, Wisconsin, Green Bay. SG: 44°  
50.1'N; 87°22.9'W. Coll: E. F. Stoermer. 6 Oct. 1967.  
114 spp. 13616 spec. H=2.024 R=0.573
- 1554a Vertical #20 net tow. Sta. GS-1A. 44°46.9'N; 86°13.7'W. Lake Mich.  
Coll: E. F. Stoermer. 3 Oct. 1967.  
91 spp. 28106 spec. H=2.212 R=0.510
- 1555 Vertical #20 net tow. Sta. GS-2A. 45°00.6'N; 85°56.5'W. Lake Mich.  
Coll: E. F. Stoermer. 3 Oct. 1967.  
81 spp. 28320 spec. H=1.973 R=0.551
- 1556 Vertical #20 net tow. Sta. GS-3A. 45°04.4'N; 85°26.6'W. Lake Mich.  
Coll: E. F. Stoermer. 3 Oct. 1967.  
56 spp. 19177 spec. H=1.767 R=0.561
- 1557 Vertical #20 net tow. Sta. GS-4A. 45°25.2'N; 85°19.0'W. Lake Mich.  
Coll: E. F. Stoermer. 3 Oct. 1967.  
81 spp. 26760 spec. H=1.705 R=0.612
- 1558 Vertical #20 net tow. Sta. GS-5A. 45°30.5'N; 85°23.5'W. Lake Mich.  
Coll: E. F. Stoermer. 4 Oct. 1967.  
69 spp. 25228 spec. H=1.775 R=0.581

1559	Vertical #20 net tow. Sta. GS-7A. 45°34.5'N; 85°41.2'W. Lake Mich. Coll: E. F. Stoermer. 4 Oct. 1967. 68 spp. 28594 spec. H=1.682 R=0.601
1560	Vertical #20 net tow. Sta. GS-8A. 45°44.7'N; 85°46.5'W. Lake Mich. Coll: E. F. Stoermer. 4 Oct. 1967. 63 spp. 21173 spec. H=1.992 R=0.519
1561	Vertical #20 net tow. Sta. GS-9A. 45°54.6'N; 86°11.5'W. Lake Mich. Coll: E. F. Stoermer. 4 Oct. 1967. 49 spp. 17037 spec. H=1.859 R=0.522
1562	Vertical #20 net tow. Sta. GS-10A. 45°34.0'N; 86°25.7'W. Lake Mich. Coll: E. F. Stoermer. 5 Oct. 1967. 54 spp. 40534 spec. H=1.882 R=0.528
1563	Vertical #20 net tow. Sta. GS-11A. 45°31.7'N; 86°41.4'W. Lake Mich. Coll: E. F. Stoermer. 5 Oct. 1967. 60 spp. 42766 spec. H=1.711 R=0.582
1564	Vertical #20 net tow. Sta. GS-12A. 45°47.1'N; 86°36.1'W. Lake Mich. Coll: E. F. Stoermer. 5 Oct. 1967. 46 spp. 60756 spec. H=1.066 R=0.722
1565	Vertical #20 net tow. Sta. GS-13A. 45°43.8'N; 86°41.6'W. Lake Mich. Coll: E. F. Stoermer. 5 Oct. 1967. 155 spp. 19722 spec. H=1.653 R=0.672
1566	Vertical #20 net tow. Sta. GS-14A. 45°40.5'N; 86°48.8'W. Green Bay. Coll: E. F. Stoermer. 5 Oct. 1967. 70 spp. 54510 spec. H=1.493 R=0.649
1567	Vertical #20 net tow. Sta. GS-15A. 45°36.2'N; 86°58.5'W. Green Bay. Coll: E. F. Stoermer. 5 Oct. 1967. 115 spp. 62984 spec. H=1.832 R=0.614
1568	Vertical #20 net tow. Sta. GS-16A. 45°47.4'N; 87°02.2'W. Little Bay De Noc. Coll: E. F. Stoermer. 5 Oct. 1967. 73 spp. 69301 spec. H=1.517 R=0.646
1569	Vertical #20 net tow. Sta. GS-17A. 45°34.0'N; 87°09.0'W. Green Bay. Coll: E. F. Stoermer. 5 Oct. 1967. 106 spp. 67273 spec. H=1.685 R=0.639
1570	Vertical #20 net tow. Sta. GS-18A. 45°23.5'N; 87°17.5'W. Green Bay. Coll: E. F. Stoermer. 5 Oct. 1967. 57 spp. 10084 spec. H=1.813 R=0.552
1571	Vertical #20 net tow. Sta. GS-19A. 45°05.1'N; 87°32.3'W. Green Bay. Coll: E. F. Stoermer. 6 Oct. 1967. 102 spp. 170827 spec. H=1.233 R=0.733
1572	Vertical #20 net tow. Sta. GS-20A. 44°40.2'N; 87°52.9'W. Green Bay. Coll: E. F. Stoermer. 6 Oct. 1967. 66 spp. 110952 spec. H=1.146 R=0.727

- 1573 Vertical #20 net tow. Sta. GS-21A. 44°55.3'N; 87°26.0'W. Green Bay.  
Coll: E. F. Stoermer. 6 Oct. 1967.  
91 spp. 89293 spec. H=1.423 R=0.685
- 1574 Vertical #20 net tow. Sta. GS-22A. 44°46.6'N; 87°17.2'W. Lake Mich.  
Coll: E. F. Stoermer. 6 Oct. 1967.  
161 spp. 34766 spec. H=2.155 R=0.576
- 1575 Vertical #20 net tow. Sta. GS-28A. 44°52.2'N; 87°39.0'W. Green Bay.  
Coll: E. F. Stoermer. 6 Oct. 1967.  
98 spp. 77508 spec. H=1.465 R=0.680
- 1580 Surface #20 net tow. Indiana Harbor, Indiana, Lake Mich. Coll: J. Ayers. 8 Nov. 1967.
- 1581 Surface #20 net tow. Gary, Indiana, Lake Mich. Coll: J. Ayers. 8 Nov. 1967.
- 1582 Surface #20 net tow. Calumet Harbor, Indiana, Lake Mich. Coll: J. Ayers. 10 Nov. 1967.
- 1583 Surface #20 net tow. Michigan City Harbor, Indiana, Lake Mich. Coll: J. Ayers. 10 Nov. 1967.
- 1584 Surface #20 net tow. Chicago Harbor, Illinois, Lake Mich. Coll: J. Ayers. 10 Nov. 1967.
- 1589 Vertical #20 net tow. 1/4 mi west of GH pierhead. Lake Mich. Coll: E. Dunster. 19 March 1968.
- 1590 Vertical #20 net tow. 2.8 mi N GH pierhead, 3/4 mi from shore. Lake Mich. Coll: E. Dunster. 19 March 1968.
- 1591 Vertical #20 net tow. Open water area in center of ice flow 1 1/4 mi from shore. Lake Mich. Coll: E. Dunster. 19 March 1968.
- 1592 Vertical #20 net tow. Sta. C-1. 42°49'40"N; 86°14'50"W. Lake Mich. Coll: E. Dunster. 26 March 1968.
- 1593 Vertical #20 net tow. Sta. C-2. 42°49'40"N; 86°18'25"W. Lake Mich. Coll: E. Dunster. 26 March 1968.
- 1594 Vertical #20 net tow. Sta. C-3. 42°49'10"N; 86°28'25"W. Lake Mich. Coll: E. Dunster. 26 March 1968.
- 1595 Vertical #20 net tow. Sta. A-1. 42°06'30"N; 86°32'00"W. Lake Mich. Coll: E. Dunster. 5 April 1968.
- 1596 Vertical #20 net tow. Sta. A-1. 42°06'30"N; 86°32'00"W. Lake Mich. Coll: E. Dunster. 16 April 1968.
- 1597 Vertical #20 net tow. Sta. A-2. 42°06'00"N; 86°37'00"W. Lake Mich. Coll: E. Dunster. 5 April 1968.
- 1598 Vertical #20 net tow. Sta. A-2. 42°06'00"N; 86°37'00"W. Lake Mich. Coll: E. Dunster. 16 April 1968.

1599	Vertical #20 net tow. Sta. A-3.	42°05'30"N; 86°43'00"W.	Lake Mich.
	Coll: E. Dunster.	5 April 1968.	
1600	Vertical #20 net tow. Sta. A-3.	42°05'30"N; 86°43'00"W.	Lake Mich.
	Coll: E. Dunster.	16 April 1968.	
1601	Vertical #20 net tow. Sta. A-4.	42°03'30"N; 87°06'30"W.	Lake Mich.
	Coll: E. Dunster.	5 April 1968.	
1602	Vertical #20 net tow. Sta. A-4.	42°03'30"N; 87°06'30"W.	Lake Mich.
	Coll: E. Dunster.	17 April 1968.	
1603	Vertical #20 net tow. Sta. A-5.	41°57'00"N; 87°18'30"W.	Lake Mich.
	Coll: E. Dunster.	3 April 1968.	
1604	Vertical #20 net tow. Sta. A-5.	41°57'00"N; 87°18'30"W.	Lake Mich.
	Coll: E. Dunster.	17 April 1968.	
1605	Vertical #20 net tow. Sta. A-6.	41°52'00"N; 87°27'00"W.	Lake Mich.
	Coll: E. Dunster.	3 April 1968.	
1606	Vertical #20 net tow. Sta. A-6.	41°52'00"N; 87°27'00"W.	Lake Mich.
	Coll: J. Ayers.	13 June 1967.	
1607	Vertical #20 net tow. Sta. A-6.	41°52'00"N; 87°27'00"W.	Lake Mich.
	Coll: E. Dunster.	17 April 1968.	
1608	Vertical #20 net tow. Sta. C-1.	42°49'40"N; 86°14'50"W.	Lake Mich.
	Coll: E. Dunster.	16 April 1968.	
1609	Vertical #20 net tow. Sta. C-2.	42°49'40"N; 86°18'25"W.	Lake Mich.
	Coll: E. Dunster.	16 April 1968.	
1610	Vertical #20 net tow. Sta. C-3.	42°49'10"N; 86°28'25"W.	Lake Mich.
	Coll: E. Dunster.	16 April 1968.	
1611	Vertical #20 net tow. Sta. C-4.	42°48'50"N; 86°41'30"W.	Lake Mich.
	Coll: E. Dunster.	2 April 1968.	
1612	Vertical #20 net tow. Sta. C-4.	42°48'50"N; 86°41'30"W.	Lake Mich.
	Coll: E. Dunster.	16 April 1968.	
1613	Vertical #20 net tow. Sta. C-5.	42°49'00"N; 86°50'00"W.	Lake Mich.
	Coll: E. Dunster.	2 April 1968.	
1614	Vertical #20 net tow. Sta. C-5.	42°49'00"N; 86°50'00"W.	Lake Mich.
	Coll: E. Dunster.	16 April 1968.	
1615	Vertical #20 net tow. Sta. C-6.	42°47'40"N; 87°26'50"W.	Lake Mich.
	Coll: E. Dunster.	2 April 1968.	
1616	Vertical #20 net tow. Sta. C-6.	42°47'40"N; 87°26'50"W.	Lake Mich.
	Coll: E. Dunster.	17 April 1968.	
1617	Vertical #20 net tow. Sta. C-7.	42°47'30"N; 87°34'30"W.	Lake Mich.
	Coll: E. Dunster.	2 April 1968.	



- 1618 Vertical #20 net tow. Sta. C-7. 42°47'30"N; 87°34'30"W. Lake Mich.  
Coll: E. Dunster. 17 April 1968.
- 1619 Vertical #20 net tow. Sta. E-1. 44°37'30"N; 86°18'12"W. Lake Mich.  
Coll: E. Dunster. 22 April 1968.
- 1620 Vertical #20 net tow. Sta. E-2. 44°37'00"N; 86°21'42"W. Lake Mich.  
Coll: E. Dunster. 22 April 1968.
- 1621 Vertical #20 net tow. Sta. E-3. 44°34'00"N; 86°40'00"W. Lake Mich.  
Coll: E. Dunster. 22 April 1968.
- 1622 Vertical #20 net tow. Sta. E-4. 44°30'18"N; 86°55'18"W. Lake Mich.  
Coll: E. Dunster. 22 April 1968.
- 1623 Vertical #20 net tow. Sta. E-5. 44°25'30"N; 87°10'18"W. Lake Mich.  
Coll: E. Dunster. 21 April 1968.
- 1624 Vertical #20 net tow. Sta. E-6. 44°27'48"N; 87°26'25"W. Lake Mich.  
Coll: E. Dunster. 21 April 1968.
- 1625 One minute surface #20 net tow 1 mile from Grand Haven, Michigan pier-  
heads bearing 260°. Sta. 1. Lake Mich. Coll: E. F. Stoermer. 7 May  
1968.
- 1626 One minute surface #20 net tow 2 miles offshore from Grand Haven,  
Michigan pierheads bearing 260°. Sta. 2. Lake Mich. Coll: E. F.  
Stoermer. 7 May 1968.
- 1627 One minute surface #20 net tow 3 miles offshore from Grand Haven,  
Michigan pierheads bearing 260°. Sta. 3. Lake Mich. Coll: E. F.  
Stoermer. 7 May 1968.
- 1628 One minute surface #20 net tow 4 miles offshore from Grand Haven,  
Michigan pierheads bearing 260°. Sta. 4. Lake Mich. Coll: E. F.  
Stoermer. 7 May 1968.
- 1629 One minute surface #20 net tow 5 miles from Grand Haven, Michigan  
pierheads bearing 260°. Sta. 5. Lake Mich. Coll: E. F. Stoermer.  
7 May 1968.
- 1630 Surface #20 net tow in Port Sheldon thermal discharge. Coll: E. F.  
Stoermer. 7 May 1968.
- 1631 Surface #20 net tow in Muskegon, Michigan plume 1/2 mi from pierheads.  
Coll: E. F. Stoermer. 7 May 1968.
- 1632 Vertical #20 net tow. Sta. A-1. 42°06'30"N; 86°32'00"W. Lake Mich.  
Coll: E. Dunster. 13 May 1968.
- 1633 Vertical #20 net tow. Sta. A-2. 42°06'00"N; 86°37'00"W. Lake Mich.  
Coll: E. Dunster. 13 May 1968.
- 1634 Vertical #20 net tow. Sta. A-3. 42°05'30"N; 86°43'00"W. Lake Mich.  
Coll: E. Dunster. 13 May 1968.

1635	Vertical #20 net tow. Sta. A-4. Coll: E. Dunster. 14 May 1968.	42°03'30"N; 87°06'30"W.	Lake Mich.
1636	Vertical #20 net tow. Sta. A-5. Coll: E. Dunster. 14 May 1968.	41°57'00"N; 87°18'30"W.	Lake Mich.
1637	Vertical #20 net tow. Sta. A-6. Coll: E. Dunster. 14 May 1968.	41°52'00"N; 87°27'00"W.	Lake Mich.
1638	Vertical #20 net tow. Sta. C-1. Coll: E. Dunster. 13 May 1968.	42°49'40"N; 86°14'50"W.	Lake Mich.
1639	Vertical #20 net tow. Sta. C-1. Coll: E. Dunster. 27 May 1968.	42°49'40"N; 86°14'50"W.	Lake Mich.
1640	Vertical #20 net tow. Sta. C-2. Coll: E. Dunster. 13 May 1968.	42°49'40"N; 86°18'25"W.	Lake Mich.
1641	Vertical #20 net tow. Sta. C-2. Coll: E. Dunster. 27 May 1968.	42°49'40"N; 86°18'25"W.	Lake Mich.
1642	Vertical #20 net tow. Sta. C-3. Coll: E. Dunster. 13 May 1968.	42°49'10"N; 86°28'25"W.	Lake Mich.
1643	Vertical #20 net tow. Sta. C-3. Coll: E. Dunster. 27 May 1968.	42°49'10"N; 86°28'25"W.	Lake Mich.
1644	Vertical #20 net tow. Sta. C-4. Coll: E. Dunster. 13 May 1968.	42°48'50"N; 86°41'30"W.	Lake Mich.
1645	Vertical #20 net tow. Sta. C-5. Coll: E. Dunster. 13 May 1968.	42°49'00"N; 86°50'00"W.	Lake Mich.
1646	Vertical #20 net tow. Sta. C-5. Coll: E. Dunster. 27 May 1968.	42°49'00"N; 86°50'00"W.	Lake Mich.
1647	Vertical #20 net tow. Sta. C-6. Coll: E. Dunster. 14 May 1968.	42°47'40"N; 87°26'50"W.	Lake Mich.
1648	Vertical #20 net tow. Sta. C-6. Coll: E. Dunster. 27 May 1968.	42°47'40"N; 87°26'50"W.	Lake Mich.
1649	Vertical #20 net tow. Sta. C-7. Coll: E. Dunster. 14 May 1968.	42°47'30"N; 87°34'30"W.	Lake Mich.
1650	Vertical #20 net tow. Sta. C-7. Coll: E. Dunster. 27 May 1968.	42°47'30"N; 87°34'30"W.	Lake Mich.
1651	Vertical #20 net tow. Sta. E-1. Coll: E. Dunster. 15 May 1968.	44°37'30"N; 86°18'12"W.	Lake Mich.
1652	Vertical #20 net tow. Sta. E-2. Coll: E. Dunster. 15 May 1968.	44°37'00"N; 86°21'42"W.	Lake Mich.

1653	Vertical #20 net tow. Sta. E-3. Coll: E. Dunster. 15 May 1968.	44°34'00"N; 86°40'00"W.	Lake Mich.
1654	Vertical #20 net tow. Sta. E-4. Coll: E. Dunster. 15 May 1968.	44°30'18"N; 86°55'18"W.	Lake Mich.
1655	Vertical #20 net tow. Sta. E-5. Coll: E. Dunster. 15 May 1968.	44°25'30"N; 87°10'18"W.	Lake Mich.
1656	Vertical #20 net tow. Sta. E-6. Coll: E. Dunster. 15 May 1968.	44°27'48"N; 87°26'25"W.	Lake Mich.
1657	Vertical #20 net tow. Sta. A-1. Coll: E. Dunster. 15 July 1968.	42°06'30"N; 86°32'00"W.	Lake Mich.
1658	Vertical #20 net tow. Sta. A-2. Coll: E. Dunster. 15 July 1968.	42°06'00"N; 86°37'00"W.	Lake Mich.
1659	Vertical #20 net tow. Sta. A-3. Coll: E. Dunster. 15 July 1968.	42°05'30"N; 86°43'00"W.	Lake Mich.
1660	Vertical #20 net tow. Sta. A-4. Coll: E. Dunster. 16 July 1968.	42°03'30"N; 87°06'30"W.	Lake Mich.
1661	Vertical #20 net tow. Sta. A-5. Coll: E. Dunster. 16 July 1968.	41°57'00"N; 87°18'30"W.	Lake Mich.
1662	Vertical #20 net tow. Sta. A-6. Coll: E. Dunster. 16 July 1968.	41°52'00"N; 87°27'00"W.	Lake Mich.
1663	Vertical #20 net tow. Sta. C-1. Coll: E. Dunster. 15 July 1968.	42°49'40"N; 86°14'50"W.	Lake Mich.
1664	Vertical #20 net tow. Sta. C-2. Coll: E. Dunster. 15 July 1968.	42°49'40"N; 86°18'25"W.	Lake Mich.
1665	Vertical #20 net tow. Sta. C-3. Coll: E. Dunster. 15 July 1968.	42°49'10"N; 86°28'25"W.	Lake Mich.
1666	Vertical #20 net tow. Sta. C-4. Coll: E. Dunster. 15 July 1968.	42°48'50"N; 86°41'30"W.	Lake Mich.
1667	Vertical #20 net tow. Sta. C-5. Coll: E. Dunster. 15 July 1968.	42°49'00"N; 86°50'00"W.	Lake Mich.
1668	Vertical #20 net tow. Sta. C-6. Coll: E. Dunster. 16 July 1968.	42°47'50"N; 87°26'50"W.	Lake Mich.
1669	Vertical #20 net tow. Sta. C-7. Coll: E. Dunster. 16 July 1968.	42°47'30"N; 87°34'30"W.	Lake Mich.
1670	Vertical #20 net tow. Sta. E-1. Coll: E. Dunster. 18 July 1968.	44°37'30"N; 86°18'12"W.	Lake Mich.

1671	Vertical #20 net tow. Sta. E-2. Coll: E. Dunster. 18 July 1968.	44°37'00"N; 86°21'42"W.	Lake Mich.
1672	Vertical #20 net tow. Sta. E-3. Coll: E. Dunster. 17 July 1968.	44°34'00"N; 86°40'00"W.	Lake Mich.
1673	Vertical #20 net tow. Sta. E-4. Coll: E. Dunster. 17 July 1968.	44°30'18"N; 86°55'18"W.	Lake Mich.
1674	Vertical #20 net tow. Sta. E-5. Coll: E. Dunster. 17 July 1968.	44°25'30"N; 87°10'18"W.	Lake Mich.
1675	Vertical #20 net tow. Sta. E-6. Coll: E. Dunster. 17 July 1968.	44°27'48"N; 87°26'25"W.	Lake Mich.
1676	Vertical #20 net tow. Sta. A-1. Coll: E. Dunster. 6 Aug. 1968.	42°06'30"N; 86°32'00"W.	Lake Mich.
1677	Vertical #20 net tow. Sta. A-2. Coll: E. Dunster. 6 Aug. 1968.	42°06'00"N; 86°37'00"W.	Lake Mich.
1678	Vertical #20 net tow. Sta. A-3. Coll: E. Dunster. 6 Aug. 1968.	42°05'30"N; 86°43'00"W.	Lake Mich.
1679	Vertical #20 net tow. Sta. A-4. Coll: E. Dunster. 7 Aug. 1968.	42°03'30"N; 87°06'30"W.	Lake Mich.
1680	Vertical #20 net tow. Sta. A-5. Coll: E. Dunster. 7 Aug. 1968.	41°57'00"N; 87°18'30"W.	Lake Mich.
1681	Vertical #20 net tow. Sta. A-6. Coll: E. Dunster. 7 Aug. 1968.	41°52'00"N; 87°27'00"W.	Lake Mich.
1682	Vertical #20 net tow. Sta. C-1. Coll: E. Dunster. 6 Aug. 1968.	42°49'40"N; 86°14'50"W.	Lake Mich.
1683	Vertical #20 net tow. Sta. C-2. Coll: E. Dunster. 6 Aug. 1968.	42°49'40"N; 86°18'25"W.	Lake Mich.
1684	Vertical #20 net tow. Sta. C-3. Coll: E. Dunster. 6 Aug. 1968.	42°49'10"N; 86°28'25"W.	Lake Mich.
1685	Vertical #20 net tow. Sta. C-4. Coll: E. Dunster. 6 Aug. 1968.	42°48'50"N; 86°41'30"W.	Lake Mich.
1686	Vertical #20 net tow. Sta. C-5. Coll: E. Dunster. 6 Aug. 1968.	42°49'00"N; 86°50'00"W.	Lake Mich.
1687	Vertical #20 net tow. Sta. C-6. Coll: E. Dunster. 8 Aug. 1968.	42°47'40"N; 87°26'50"W.	Lake Mich.
1688	Vertical #20 net tow. Sta. C-7. Coll: E. Dunster. 8 Aug. 1968.	42°47'30"N; 87°34'30"W.	Lake Mich.
1689	Vertical #20 net tow. Sta. E-3. Coll: E. Dunster. 9 Aug. 1968.	44°34'00"N; 86°40'00"W.	Lake Mich.

1690	Vertical #20 net tow. Sta. E-4.	44°30'18"N; 86°55'18"W.	Lake Mich.
	Coll: E. Dunster. 9 Aug. 1968.		
1691	Vertical #20 net tow. Sta. E-5.	44°25'30"N; 87°10'18"W.	Lake Mich.
	Coll: E. Dunster. 9 Aug. 1968.		
1692	Vertical #20 net tow. Sta. E-6.	44°27'48"N; 87°26'25"W.	Lake Mich.
	Coll: E. Dunster. 9 Aug. 1968.		
1693	Vertical #20 net tow. Sta. A-1.	42°06'30"N; 86°32'00"W.	Lake Mich.
	Coll: E. Dunster. 12 Sept. 1968.		
1694	Vertical #20 net tow. Sta. A-2.	42°06'00"N; 86°37'00"W.	Lake Mich.
	Coll: E. Dunster. 12 Sept. 1968.		
1695	Vertical #20 net tow. Sta. A-3.	42°05'30"N; 86°43'00"W.	Lake Mich.
	Coll: E. Dunster. 12 Sept. 1968.		
1696	Vertical #20 net tow. Sta. A-4.	42°03'30"N; 87°06'30"W.	Lake Mich.
	Coll: E. Dunster. 13 Sept. 1968.		
1697	Vertical #20 net tow. Sta. A-5.	41°57'00"N; 87°18'30"W.	Lake Mich.
	Coll: E. Dunster. 13 Sept. 1968.		
1698	Vertical #20 net tow. Sta. A-6.	41°52'00"N; 87°27'00"W.	Lake Mich.
	Coll: E. Dunster. 13 Sept. 1968.		
1699	Vertical #20 net tow. Sta. C-1.	42°49'40"N; 86°14'50"W.	Lake Mich.
	Coll: E. Dunster. 11 Sept. 1968.		
1700	Vertical #20 net tow. Sta. C-2.	42°49'40"N; 86°18'25"W.	Lake Mich.
	Coll: E. Dunster. 11 Sept. 1968.		
1701	Vertical #20 net tow. Sta. C-3.	42°49'10"N; 86°28'25"W.	Lake Mich.
	Coll: E. Dunster. 12 Sept. 1968.		
1702	Vertical #20 net tow. Sta. C-4.	42°48'50"N; 86°41'30"W.	Lake Mich.
	Coll: E. Dunster. 12 Sept. 1968.		
1703	Vertical #20 net tow. Sta. C-5.	42°49'00"N; 86°50'00"W.	Lake Mich.
	Coll: E. Dunster. 12 Sept. 1968.		
1704	Vertical #20 net tow. Sta. C-6.	42°47'40"N; 87°26'50"W.	Lake Mich.
	Coll: E. Dunster. 13 Sept. 1968.		
1705	Vertical #20 net tow. Sta. C-7.	42°47'30"N; 87°34'30"W.	Lake Mich.
	Coll: E. Dunster. 13 Sept. 1968.		
1706	Vertical #20 net tow. Sta. E-1.	44°37'30"N; 86°18'12"W.	Lake Mich.
	Coll: E. Dunster. 14 Sept. 1968.		
1707	Vertical #20 net tow. Sta. E-2.	44°37'00"N; 86°21'42"W.	Lake Mich.
	Coll: E. Dunster. 14 Sept. 1968.		

1708 Vertical #20 net tow. Sta. E-3. 44°34'00"N; 86°40'00"W. Lake Mich.  
Coll: E. Dunster. 14 Sept. 1968.

1709 Vertical #20 net tow. Sta. E-4. 44°30'18"N; 86°55'18"W. Lake Mich.  
Coll: E. Dunster. 14 Sept. 1968.

1710 Vertical #20 net tow. Sta. E-5. 44°25'30"N; 87°10'18"W. Lake Mich.  
Coll: E. Dunster. 14 Sept. 1968.

1711 Vertical #20 net tow. Sta. E-6. 44°27'48"N; 87°26'25"W. Lake Mich.  
Coll: E. Dunster. 14 Sept. 1968.

1712 Vertical #20 net tow. Sta. A-1. 42°06'30"N; 86°32'00"W. Lake Mich.  
Coll: E. F. Stoermer. 7 Oct. 1968.

1713 Vertical #20 net tow. Sta. A-2. 42°06'00"N; 86°37'00"W. Lake Mich.  
Coll: E. F. Stoermer. 7 Oct. 1968.

1714 Vertical #20 net tow. Sta. A-3. 42°05'30"N; 86°43'00"W. Lake Mich.  
Coll: E. F. Stoermer. 7 Oct. 1968.

1715 Vertical #20 net tow. Sta. A-4. 42°03'30"N; 87°06'30"W. Lake Mich.  
Coll: E. F. Stoermer. 8 Oct. 1968.

1716 Vertical #20 net tow. Sta. A-5. 41°57'00"N; 87°18'30"W. Lake Mich.  
Coll: E. F. Stoermer. 8 Oct. 1968.

1717 Vertical #20 net tow. Sta. A-6. 41°52'00"N; 87°27'00"W. Lake Mich.  
Coll: E. F. Stoermer. 8 Oct. 1968.

1718 Vertical #20 net tow. Sta. C-1. 42°49'40"N; 86°14'50"W. Lake Mich.  
Coll: E. F. Stoermer. 7 Oct. 1968.

1719 Vertical #20 net tow. Sta. C-2. 42°49'40"N; 86°18'25"W. Lake Mich.  
Coll: E. F. Stoermer. 7 Oct. 1968.

1720 Vertical #20 net tow. Sta. C-3. 42°49'10"N; 86°28'25"W. Lake Mich.  
Coll: E. F. Stoermer. 7 Oct. 1968.

1721 Vertical #20 net tow. Sta. C-4. 42°48'50"N; 86°41'30"W. Lake Mich.  
Coll: E. F. Stoermer. 7 Oct. 1968.

1722 Vertical #20 net tow. Sta. C-5. 42°49'00"N; 86°50'00"W. Lake Mich.  
Coll: E. F. Stoermer. 7 Oct. 1968.

1723 Vertical #20 net tow. Sta. C-6. 42°47'40"N; 87°26'50"W. Lake Mich.  
Coll: E. F. Stoermer. 8 Oct. 1968.

1724 Vertical #20 net tow. Sta. C-7. 42°47'30"N; 87°34'30"W. Lake Mich.  
Coll: E. F. Stoermer. 8 Oct. 1968.

1725 Vertical #20 net tow. Sta. E-1. 44°37'30"N; 86°18'12"W. Lake Mich.  
Coll: E. F. Stoermer. 11 Oct. 1968.

1726	Vertical #20 net tow.	Sta. E-2.	44°37'00"N; 86°21'42"W.	Lake Mich.
	Coll: E. F. Stoermer.	11 Oct. 1968.		
1727	Vertical #20 net tow.	Sta. E-3.	44°34'00"N; 86°40'00"W.	Lake Mich.
	Coll: E. F. Stoermer.	11 Oct. 1968.		
1728	Vertical #20 net tow.	Sta. E-4.	44°30'18"N; 86°55'18"W.	Lake Mich.
	Coll: E. F. Stoermer.	11 Oct. 1968.		
1729	Vertical #20 net tow.	Sta. E-5.	44°25'30"N; 87°10'18"W.	Lake Mich.
	Coll: E. F. Stoermer.	11 Oct. 1968.		
1730	Vertical #20 net tow.	Sta. E-6.	44°27'48"N; 87°26'25"W.	Lake Mich.
	Coll: E. F. Stoermer.	10 Oct. 1968.		
1731	Vertical #20 net tow.	Sta. A-3.	42°05'30"N; 86°43'00"W.	Lake Mich.
	Coll: E. Dunster.	8 Nov. 1968.		
1732	Vertical #20 net tow.	Sta. A-4.	42°03'30"N; 87°06'30"W.	Lake Mich.
	Coll: E. Dunster.	13 Nov. 1968.		
1733	Vertical #20 net tow.	Sta. A-6.	41°52'00"N; 87°27'00"W.	Lake Mich.
	Coll: E. Dunster.	13 Nov. 1968.		
1734	Vertical #20 net tow.	Sta. C-1.	42°49'40"N; 86°14'50"W.	Lake Mich.
	Coll: E. Dunster.	10 Nov. 1968.		
1735	Vertical #20 net tow.	Sta. C-2.	42°49'40"N; 86°18'25"W.	Lake Mich.
	Coll: E. Dunster.	10 Nov. 1968.		
1736	Vertical #20 net tow.	Sta. C-3.	42°49'10"N; 86°28'25"W.	Lake Mich.
	Coll: E. Dunster.	10 Nov. 1968.		
1737	Vertical #20 net tow.	Sta. C-4.	42°48'50"N; 86°41'30"W.	Lake Mich.
	Coll: E. Dunster.	10 Nov. 1968.		
1738	Vertical #20 net tow.	Sta. C-5.	42°49'00"N; 86°50'00"W.	Lake Mich.
	Coll: E. Dunster.	10 Nov. 1968.		
1739	Vertical #20 net tow.	Sta. C-6.	42°47'40"N; 87°26'50"W.	Lake Mich.
	Coll: E. Dunster.	10 Nov. 1968.		
1740	Vertical #20 net tow.	Sta. C-7.	42°47'30"N; 87°34'30"W.	Lake Mich.
	Coll: E. Dunster.	10 Nov. 1968.		
1741	Vertical #20 net tow.	Sta. E-1.	44°37'30"N; 86°18'12"W.	Lake Mich.
	Coll: E. Dunster.	9 Nov. 1968.		
1742	Vertical #20 net tow.	Sta. E-2.	44°37'00"N; 86°21'42"W.	Lake Mich.
	Coll: E. Dunster.	9 Nov. 1968.		
1743	Vertical #20 net tow.	Sta. E-3.	44°34'00"N; 86°40'00"W.	Lake Mich.
	Coll: E. Dunster.	9 Nov. 1968.		

1744	Vertical #20 net tow. Sta. E-4. Coll: E. Dunster. 9 Nov. 1968.	44°30'18"N; 86°55'18"W.	Lake Mich.
1800	Vertical #20 net tow. Sta. E-1. Coll: E. Dunster. 9 Aug. 1968.	44°37'30"N; 86°18'12"W.	Lake Mich.
1801	Vertical #20 net tow. Sta. E-2. Coll: E. Dunster. 9 Aug. 1968.	44°37'00"N; 86°21'42"W.	Lake Mich.
1802	Vertical #20 net tow. Sta. A-1. Coll: J. Ayers. 24 April 1969.	42°06'30"N; 86°32'00"W.	Lake Mich.
1803	Vertical #20 net tow. Sta. A-2. Coll: J. Ayers. 25 April 1969.	42°06'00"N; 86°37'00"W.	Lake Mich.
1804	Vertical #20 net tow. Sta. A-3. Coll: J. Ayers. 25 April 1969.	42°05'30"N; 86°43'00"W.	Lake Mich.
1805	Vertical #20 net tow. Sta. A-4. Coll: J. Ayers. 25 April 1969.	42°03'30"N; 87°06'30"W.	Lake Mich.
1806	Vertical #20 net tow. Sta. A-5. Coll: J. Ayers. 25 April 1969.	41°57'00"N; 87°18'30"W.	Lake Mich.
1807	Vertical #20 net tow. Sta. A-6. Coll: J. Ayers. 25 April 1969.	41°52'00"N; 87°27'00"W.	Lake Mich.
1808	Vertical #20 net tow. Sta. C-1. Coll: J. Ayers. 23 April 1969.	42°49'40"N; 86°14'50"W.	Lake Mich.
1809	Vertical #20 net tow. Sta. C-2. Coll: J. Ayers. 23 April 1969.	42°49'40"N; 86°18'25"W.	Lake Mich.
1810	Vertical #20 net tow. Sta. C-3. Coll: J. Ayers. 23 April 1969.	42°49'10"N; 86°28'25"W.	Lake Mich.
1811	Vertical #20 net tow. Sta. C-6. Coll: J. Ayers. 26 April 1969.	42°47'40"N; 87°26'50"W.	Lake Mich.
1812	Vertical #20 net tow. Sta. C-7. Coll: J. Ayers. 26 April 1969.	42°47'30"N; 87°34'30"W.	Lake Mich.
1813	Vertical #20 net tow. Sta. E-1. Coll: J. Ayers. 27 April 1969.	44°37'30"N; 86°18'12"W.	Lake Mich.
1814	Vertical #20 net tow. Sta. E-2. Coll: J. Ayers. 27 April 1969.	44°37'00"N; 86°21'42"W.	Lake Mich.
1815	Vertical #20 net tow. Sta. E-3. Coll: J. Ayers. 27 April 1969.	44°34'00"N; 86°40'00"W.	Lake Mich.
1816	Vertical #20 net tow. Sta. E-4. Coll: J. Ayers. 27 April 1969.	44°30'18"N; 86°55'18"W.	Lake Mich.



1817	Vertical #20 net tow. Sta. E-5. 44°25'30"N; 87°10'18"W. Lake Mich. Coll: J. Ayers. 27 April 1969.			
1818	Vertical #20 net tow. Sta. E-6. 44°27'48"N; 87°26'25"W. Lake Mich. Coll: J. Ayers. 27 April 1969.			
ANSP 60973	Lake Michigan. 1876. 88 spp. 4234 spec.	H=2.065	R=0.539	
ANSP 3540	Diatomaceae. Chicago Water Supply. Coll: B. W. Thomas. 11 May 1879. 66 spp. 21463 spec.	H=1.539	R=0.633	
ANSP 3541	Chicago Water Supply. Coll: B. W. Thomas. 1 Feb. 1881. 89 spp. 10223 spec.	H=1.765	R=0.607	
ANSP 3507	Chicago Water Supply. Coll: B. W. Thomas. 19 Feb. 1881. 38 spp. 8834 spec.	H=1.159	R=0.681	
ANSP 46910a	Plankton tow in Lake Mich. Chicago, Ill. From Field Museum Sheet #1239246. Coll: K. E. Damann. Oct. 1945. 62 spp. 91551 spec.	H=1.282	R=0.689	
ANSP 46921a	Plankton tow in Lake Mich. Ill. From Field Museum Sheet #1239302. Coll: K. E. Damann. 23 Nov. 1945. 106 spp. 154634 spec.	H=1.801	R=0.614	
ANSP 46908a	Plankton tow in Lake Mich. Chicago, Ill. From Field Museum Sheet #1239241. Coll: K. E. Damann. Dec. 1945. 32 spp. 9932 spec.	H=1.762	R=0.492	
ANSP 46917a	Plankton tow in Lake Mich. Ill. From Field Museum Sheet #1239297. Coll: K. E. Damann. 12 Jan. 1946. 108 spp. 360701 spec.	H=1.640	R=0.650	
ANSP 46915a	Plankton tow in Lake Mich. Ill. From Field Museum Sheet #1239277. Coll: K. E. Damann. 20 Feb. 1946. 87 spp. 17575 spec.	H=1.982	R=0.556	
ANSP 46914a	Plankton tow in Lake Mich. Chicago, Ill. From Field Museum Sheet #1239263. Coll: K. E. Damann. 19 April 1946. 103 spp. 93661 spec.	H=2.055	R=0.557	
ANSP 46924a	Plankton tow in Lake Mich. Ill. From Field Museum Sheet #1239315. Coll: K. E. Damann. 10 May 1946. 113 spp. 141756 spec.	H=1.777	R=0.624	
ANSP 46923a	Plankton tow in Lake Mich. From Field Museum Sheet #1239312. Coll: K. E. Damann. 20 Nov. 1946. 104 spp. 45758 spec.	H=2.103	R=0.547	
ANSP 46920a	Plankton tow in Lake Mich. From Field Museum Sheet #1239301. Coll: K. E. Damann. 20 Dec. 1946. 110 spp. 324569 spec.	H=1.227	R=0.739	
ANSP 46905a	Plankton tow in Lake Mich. Chicago, Ill. From Field Museum Sheet #1239231. Coll: K. E. Damann. Jan. 1947. 82 spp. 81596 spec.	H=1.631	R=0.630	

ANSP 46909a	Plankton tow in Lake Mich. Chicago, Ill. From Field Museum Sheet #1239244. Coll: K. E. Damann. March 1947. 96 spp. 21963 spec. H=1.942 R=0.575
ANSP 46912a	Plankton tow in Lake Mich. Chicago, Ill. From Field Museum Sheet #1239257. Coll: K. E. Damann. April 1947. 44 spp. 8698 spec. H=1.851 R=0.511
ANSP 46916a	Plankton tow in Lake Mich. Ill. From Field Museum Sheet #1239296. Coll: K. E. Damann. 4 May 1947. 122 spp. 294734 spec. H=2.059 R=0.571
ANSP 46906a	Plankton tow in Lake Mich. Chicago, Ill. From Field Museum Sheet #1239232. Coll: K. E. Damann. May 1947. 111 spp. 150672 spec. H=2.428 R=0.485
ANSP 46919a	Plankton tow in Lake Mich. Ill. From Field Museum Sheet #1239300. Coll: K. E. Damann. 5 June 1947. 130 spp. 65909 spec. H=2.534 R=0.479
ANSP 46907a	Plankton tow in Lake Mich. Chicago, Ill. From Field Museum Sheet #1239234. Coll: K. E. Damann. July 1947. 106 spp. 202793 spec. H=2.083 R=0.553
ANSP 46913	Plankton tow in Lake Mich. Chicago, Ill. From Field Museum Sheet #1239258. Coll: K. E. Damann. 6 Aug. 1947. 36 spp. 9562 spec. H=0.947 R=0.736
ANSP 46922a	Plankton tow in Lake Mich. Ill. From Field Museum Sheet #1239309. Coll: K. E. Damann. 21 Aug. 1947. 136 spp. 206338 spec. H=1.859 R=0.622
ANSP 46758a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120598. Coll: E. S. Ford. 5 June 1937. 154 spp. 28042 spec. H=2.595 R=0.485
ANSP 46771a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120613. Coll: E. S. Ford. 11 June 1937. 63 spp. 42062 spec. H=1.821 R=0.561
ANSP 46743a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120580. Coll: E. S. Ford. 20 June 1937. 92 spp. 23354 spec. H=2.095 R=0.537
ANSP 46745a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120584. Coll: E. S. Ford. 3 July 1937. 34 spp. 4785 spec. H=1.878 R=0.467
ANSP 46770a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120612. Coll: E. S. Ford. 9 July 1937. 72 spp. 16768 spec. H=1.642 R=0.616
ANSP 46764a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120606. Coll: E. S. Ford. 17 July 1937. 155 spp. 12410 spec. H=2.570 R=0.490

ANSP 46757a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120597. Coll: E. S. Ford. 25 July 1937. 141 spp. 20771 spec. H=1.752 R=0.646
ANSP 46747a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120586. Coll: E. S. Ford. 1 Aug. 1937. 156 spp. 40397 spec. H=1.733 R=0.657
ANSP 46763a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120605. Coll: E. S. Ford. 23 Aug. 1937. 128 spp. 4928 spec. H=2.571 R=0.470
ANSP 46765a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120607. Coll: L. H. Trffany. 2nd Daily. 30 Aug. 1937. 59 spp. 17930 spec. H=1.486 R=0.636
ANSP 46769a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120611. Coll: L. H. Trffany. 7 Sept. 1937. 29 spp. 4606 spec. H=1.334 R=0.604
ANSP 46752a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120591. Coll: E. S. Ford. 15 Sept. 1937. 113 spp. 4594 spec. H=2.229 R=0.528
ANSP 46760a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120602. Coll: W. A. Daily. 22 Sept. 1937. 75 spp. 20309 spec. H=1.723 R=0.601
ANSP 46750a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120589. Coll: W. A. Daily. 24 Sept. 1937. 90 spp. 21217 spec. H=1.872 R=0.584
ANSP 46744a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120583. Coll: W. A. Daily. 6 Oct. 1937. 73 spp. 20504 spec. H=1.705 R=0.603
ANSP 46748a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120587. Coll: W. A. Daily. 13 Oct. 1937. 83 spp. 4684 spec. H=1.169 R=0.735
ANSP 46767a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120609. Coll: W. A. Daily. 27 Oct. 1937. 104 spp. 25851 spec. H=1.329 R=0.714
ANSP 46749a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120588. Coll: W. A. Daily. 12 March 1938. 71 spp. 8239 spec. H=1.829 R=0.571
ANSP 46768a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120610. Coll: W. A. Daily. 16 March 1938. 109 spp. 6803 spec. H=1.661 R=0.646
ANSP 46762a	Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet #1120604. Coll: W. A. Daily. 18 March 1938. 107 spp. 4534 spec. H=2.210 R=0.527

ANSP 46751a Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet  
 #1120590. Coll: W. A. Daily. 30 March 1938.  
 63 spp. 8956 spec. H=1.615 R=0.610

ANSP 46772a Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet  
 #1120614. Coll: W. A. Daily. 18 April 1938.  
 34 spp. 14090 spec. H=1.361 R=0.614

ANSP 46756a Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet  
 #1120596. Coll: W. A. Daily. 27 April 1938.  
 71 spp. 59557 spec. H=1.772 R=0.584

ANSP 46759a Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet  
 #1120601. Coll: W. A. Daily. 19 May 1938.  
 63 spp. 29620 spec. H=0.938 R=0.774

ANSP 46761a Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet  
 #1120603. Coll: W. A. Daily. 27 May 1938.  
 72 spp. 36692 spec. H=1.669 R=0.610

ANSP 46766a Net collection. Lake Mich. Evanston, Ill. From Field Museum Sheet  
 #1120608. Coll: K. Seaman. 14 Dec. 1938.  
 58 spp. 6312 spec. H=2.121 R=0.478